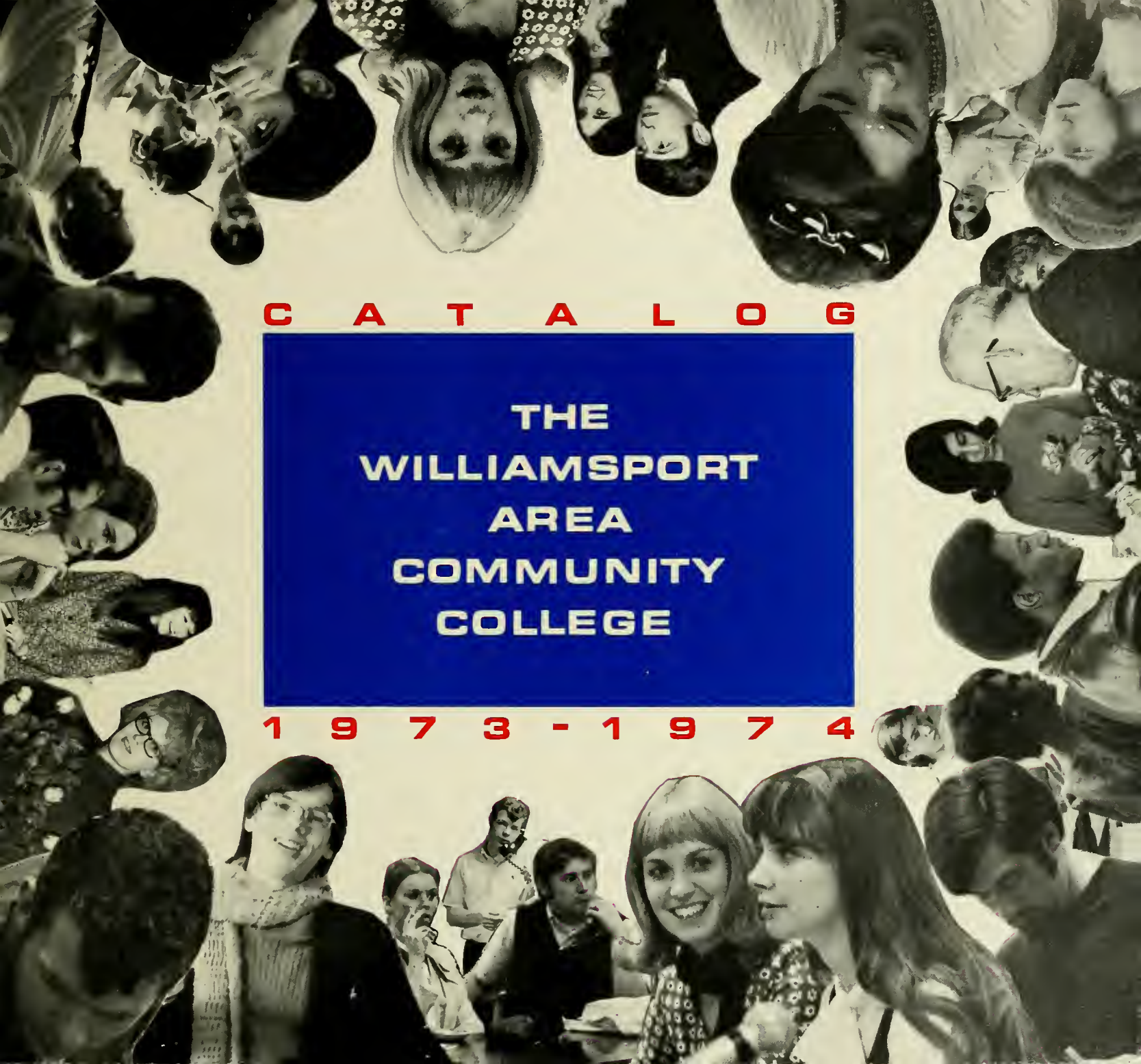
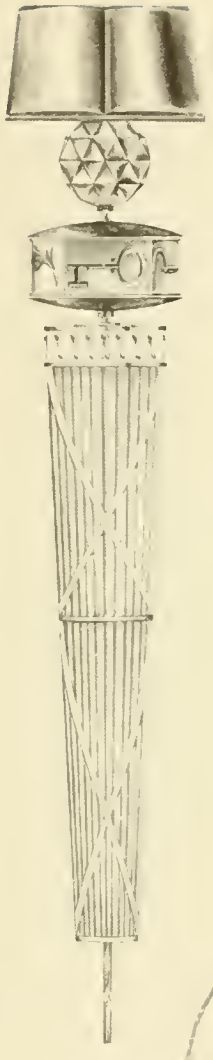


CATALOG

THE WILLIAMSPORT AREA COMMUNITY COLLEGE

1973-1974



Philosophy

The Williamsport Area Community College is committed to an educational program which recognizes that:

1. *The complexity and interrelatedness of modern society demands optimal involvement of community resources;*
2. *A productive and educated citizenry is a vital community resource;*
3. *The productive and educated citizen is one who is involved in the continuing, life-long process of acquiring self-realization, a commitment to community service, a unified body of knowledge, a habit of evaluative thinking, some sensitivity to art forms, an appreciation of his social, cultural, and political heritage, a pattern of ethical and moral behavior, and skills useful in the productive efforts of society;*
4. *An institution of higher education has responsibility to provide programs of study and an environment conducive to intellectual growth and character development;*
5. *Higher education, through a comprehensive range of programs designed for the widest possible spectrum of interests, abilities, and needs, must be available to all who can profit from it.*

Objectives

Through a favorable educational climate consisting of a close student-teacher relationship, a faculty committed to teaching, and an administration to making possible the most effective learning situation, The Williamsport Area Community College devotes its efforts toward providing the following:

1. *Individual and group counseling as well as formally structured programs to aid applicants and students select and pursue sound life and vocational aims;*
2. *Developmental programs to assist students in preparing for college-level study;*
3. *Two years of college work leading to an Associate of Arts or Sciences degree designed to prepare students for transfer toward a baccalaureate degree at four-year colleges and universities;*
4. *Two years of college work leading to an Associate of Applied Arts or Applied Sciences degree designed to prepare students for entrance into paraprofessional or technical careers;*
5. *Special programs leading to certificates of proficiency designed to prepare students for employment in health, business, industry, or other fields;*
6. *Community service and continuing education, including seminars, workshops, and instruction in the worthwhile use of leisure time and the updating of knowledge and skills;*
7. *A campus environment that both supplements and extends the educational program;*
8. *Assistance to graduates seeking placement in other colleges and in careers for which they are prepared.*

Penn College

FOREWORD

THE WILLIAMSPORT AREA COMMUNITY COLLEGE IS FOR YOU –

If you wish to be part of an exciting collegiate learning experience

If you wish to complete *the first two years of collegiate-academic credit* and transfer to a four-year institution for your baccalaureate degree

If you wish to complete a *one or two-year study of a selected technology* which will prepare you for immediate entry into business or industry

If you wish to *make up educational deficiencies* in order to enroll in an academic curriculum or technical program

If you wish to *up-grade yourself occupationally* by enrolling in either day or night programs/curricula

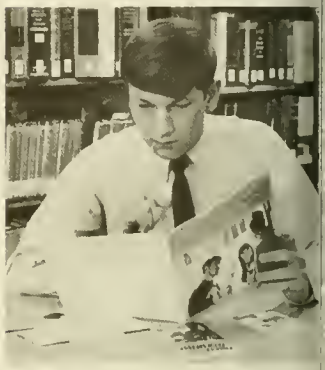
If you wish to enroll in individual classes or full programs/curricula for *cultural development and enjoyment*

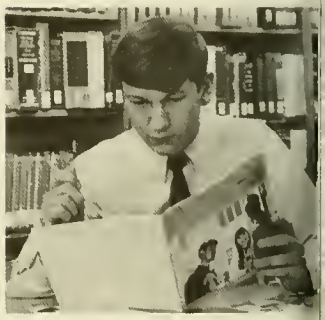
If you wish to attend a college where the *students* are of *prime importance*

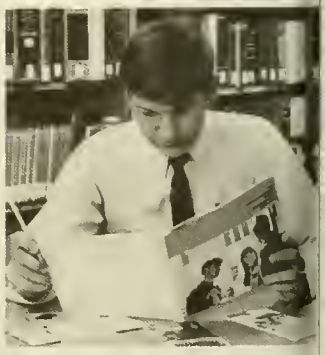
If you wish to be stimulated by competent instructors and counselors

If you wish to attend two years of college at a *minimum cost* while earning an Associate Degree or Certificate

The Williamsport Area Community College is a two-year, co-educational, publicly supported institution serving North-Central Pennsylvania.







ACCREDITATION

The Williamsport Area Community College is a fully accredited member of the Middle States Association of Colleges and Secondary Schools.

Accreditation is determined and awarded by the Association's Commission on Institutions of Higher Education and is an expression of that body's confidence in the institution's actual present performance and in its long range ability to maintain and improve that performance. Accreditation indicates that, in the Commission's judgment, an institution possesses clearly defined and appropriate objectives, has established conditions under which it can reasonably be expected to attain them, appears in fact to be attaining them in substantial measure, and should be able to continue to do so.

HOW TO USE THIS CATALOG

Think of this catalog as a conversation with many new friends who want to help you. Read what they have to say.

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DR. KENNETH E. CARL, President

PRESIDENT CARL ADVISES YOU ABOUT YOUR CAREER

The fact that you are reading this catalog means that you are considering attending a two-year college. But interest is not enough to make sure that your choice will be right and that your college career will be effective. Statistics show that more than half of all students who start college never graduate. This could mean that there is something wrong with the students, with their college choices, or with their selected programs.

If you want to be part of the half that succeeds, there are practical steps that you can take. These practical steps are based on knowledge — knowledge of yourself, knowledge of the range of educational opportunities available, knowledge of the specific college which may be right for you.

Many books have been written about occupations and career choices. Today, most schools provide vocational guidance and offer occupational courses.

Although such courses and books are necessary for your training, the most valuable experience for you right now is to think about yourself in relation to your life's work.

WHAT ARE YOU GOING TO DO WITH THE NEXT FIFTY YEARS OF YOUR LIFE?

Actually, that is what the whole question of career choice means.

In fifty years or less you will be ready to retire. What are you going to do between now and then?

The question of what you will do in the next two, or four, or six years is not nearly so important as what you will have accomplished fifty years from now. But what you decide now and what you do in the next two or six years will determine the course of the next fifty years.

Are you going to drift into a job? Are you going to keep working at a job you're not satisfied with? This may be the most important decision of your life.

WHEN SHOULD YOU BEGIN TO CHOOSE YOUR CAREER?

Even if you are still in junior high school, you should begin to think about "the next fifty years." If you are a high school junior or senior, the time is now. If you are out of school and working, it is not too late.

Of course your choice may be and should be tentative. That is, you should keep your decision subject to change. As you learn more about yourself and more about occupations, you may wish to revise or change your choice. This is desirable if you act on new and pertinent information.

Our hope is that you will have at least some general idea of your choice before you enter college. In order to make a wise choice of college and of your major program in college you need to know the general direction in which you expect to go in the next fifty years.

For those of you who are uncertain, we have a Vocational Diagnostic Program, a program designed to assist students in career selection through testing, counseling, and actual job trial experience. We also have a Developmental Program which was designed to meet the needs of students who require further preparation before they can enroll in a college program.

WHAT FACTORS SHOULD INFLUENCE A CAREER CHOICE?

Obviously, you should be influenced by two broad considerations: yourself and the occupation. This means that you must know yourself — physically, mentally, socially; your aptitudes, interests, and abilities.

You need to know careers. This takes time, study, and effort. But it is interesting and rewarding. You should analyze yourself in relation to many possible careers.

KNOWING YOURSELF

You can make certain broad generalizations about yourself in different areas. Some of these will overlap. In the next few years some will change. When you analyze your likes and dislikes, think not only of what you like now, but of what you probably will like ten, twenty-five, or forty years from now.

LEARNING ABOUT CAREERS

Be alert to all the possibilities in your school and home and community to learn about different occupations and professions. Do not just assume that you will be a physician, or an engineer, or a lawyer, and stop there. Explore a wide range of careers.

TEN SUGGESTED STEPS IN CHOOSING A CAREER

In conclusion, let me suggest ten steps to help you choose your career or career area:

1. Analyze yourself. What are your interests, aptitudes, abilities? Talk with your parents, teachers, and counselors. If possible, take some intelligence and aptitude tests. But remember that tests, family, and friends cannot choose your career for you. Family and friends can only make suggestions to help you understand yourself. Tests can act only as directional signs. The best analysis of yourself is made by yourself.

2. Learn to be honest with yourself. Examine your weaknesses as well as your strengths. Improve your strengths and try to overcome your weaknesses. For instance, if you want to be an engineer but

have a poor record in mathematics, work harder on your mathematics. If after a sincere effort to master mathematics your record is still low, it is time to be honest with yourself and to investigate other career areas.

3. Try to decide what you want to get out of life and what you want to contribute to life. Is it money, fame, happiness, friendship, service to your fellowmen, or something else?

4. Group into broad areas the types of careers which have interested you most as you went over these first three steps. These are the basic steps in becoming acquainted with yourself intellectually. Your honest self-analysis and your interests will suggest some broad areas of activities. Write these down and think about them.

5. Read widely about these areas. A particularly interesting plan is to read biographies of people who have been successful in the career areas you are considering. You will want to read weekly and monthly magazines for new developments and announcements in these fields of endeavor. Frequently, students have kept scrapbooks or folders of clippings about particular career areas.

6. Confer with men and women in your community about different career areas. Such people may be friends of your family or persons recommended to you by your principal and teachers or by officers of service clubs. Get first-hand information from those who are engaged in the occupations or professions which you are investigating.

7. Visit the places where these occupations and professions are practiced. Your visits may take you to industries, research centers, hospitals, art museums, concert halls — any place where you can observe people working in the career areas that interest you. Examine working conditions, pay, responsibilities, recognition of effort.

8. Make a tentative choice of one of these career areas. Whether this choice is only a hypothesis or whether you think it is fairly certain, keep it subject to re-examination.

9. Assess the possibility of attaining this goal. Be honest with yourself. For instance, if you select

medicine, can you afford ten years of study after high school? If not, is your academic record strong enough to justify your asking for financial aid?

10. Start right now, today, to make yourself a worthy candidate for your career goal. Study harder, read more, make your time count. A scientist, for example, must be precise and accurate. If you are thinking in terms of a scientific area, learn to complete assignments on time. Be accurate in your school problems. (Incidentally, this is good advice for any career.)

Now is the time to study this catalog carefully to find out if WACC has a program which will fit your abilities and needs.

DR. C. HERSCHEL JONES, Vice President

DR. JONES INTRODUCES YOU TO THE COLLEGE

The Williamsport Area Community College is an open-door educational institution organized to provide the programs and courses needed by individuals in the North-Central Pennsylvania service area of the College. It serves this area in a multitude of ways by being a focal point of educational interest, a place where ideas germinate, and where a welcome sign is extended to you if you wish to learn. The Faculty, Administration, and the Board of Trustees which operate The Williamsport Area Community College work together to provide the knowledge, skills and facilities needed by students who enter a variety of business, industrial and educational fields.

To keep ahead of changing times, The Williamsport Area Community College offers forty-six programs and other learning opportunities designed to fit your individual abilities and needs. It is one of the most comprehensive of its kind in Pennsylvania. It presently has a faculty of 210 and a fulltime student body of 3000. Its student body is composed mostly of Pennsylvania residents. However, it attracts students from nearby states and foreign nations because of the variety and excellence of its programs.

In this comprehensive College, four major areas of educational opportunities are available for you:

The School of Liberal Arts and Sciences through its College Transfer Curricula will provide two years of higher education for you which will lead to the Associate of Arts or Associate of Science Degree to enable you to enter a four-year college or university in pursuit of your baccalaureate degree.

The School of Applied Arts and Sciences' Career Programs will provide one or two years of specialized education for you which will lead to a Certificate, an Associate in Applied Science Degree or an Associate in Applied Arts Degree to prepare you for immediate employment in a broad variety of occupations.

The School of Continuing Education and Community Services will provide courses for you from the School of Liberal Arts and Sciences and the School of Applied Arts and Sciences and special programs, seminars and workshops.

The Developmental Program offers courses in mathematics, English, and reading if you need help to make up academic deficiencies in order to qualify for college-level programs. These are non-credit courses.

It is the intention of the College to offer you the educational or training program which you are best qualified to pursue. We welcome you whatever your age or ability, regardless of your economic or social status. We are equally interested in you whether you want to be an architect, an auto-mechanic, a sign painter, a scientist, a plumber, or a philosopher.

John W. Gardner, former Secretary of Health, Education, and Welfare, in commenting on quality and equality, sums up our philosophy:

"The society which scorns excellence in plumbing because plumbing is a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water."

Cromar Building

Klump Academic Center

Herman T. Schneebeli Building

George H. Parkes Building

ADMISSIONS

ADMISSION REQUIREMENTS

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Individual initiative and capability keynote our admission's policy. A student's past academic records are important, but they do not represent an accurate estimate of his career potential. Our programs and curricula have been designed to meet a variety of needs and desires. All we expect is that you learn as much as you reasonably can in view of your individual capacity.

Subscribing to the belief that anyone who seeks more education should find it and hoping to prevent rather than support unemployable citizens in our society, the College promotes and adheres to its open-door policy. Applicants for admission in our programs and curricula have ranged in age from seventeen to "over thirty." Many of them have exceptional ability and a keen desire for learning. However, high school and college dropouts have also re-entered school. Married students, over ten percent of our full-time students, have discovered with us opportunities to earn an Associate Degree while fulfilling family responsibilities.

We are proud to say that we are able to offer to nearly every applicant admission into a program/curriculum in which he has a reasonable chance for success. We are able to do this not only because of our wide variety of educational programs and curricula but also because of our guidance and counseling services. We provide professional advice to help you select a program or curriculum suited to your aptitudes, abilities, and needs. In addition, our Developmental Program for the development of language, mathematics, and science skills will help prepare you for college-level curricula to make possible the achievement of your educational goals.

GENERAL ADMISSIONS POLICY

The admissions policy at The Williamsport Area Community College is liberal, designed to extend an educational opportunity to all who show potential for achievement. Your admission to the College is contingent upon meeting the requirements of the particular program or curriculum you desire.

ORDER OF PREFERENCE FOR ADMISSION

Preference will be given;

First, to applicants from The Williamsport Area Community College sponsor districts;

Second, to applicants from districts sponsoring other Pennsylvania community colleges (with home college approval);

Third, to applicants from Pennsylvania school districts not sponsoring community colleges;

Fourth, to out-of-state applicants.

ADMISSION PROCEDURE AND INFORMATION

An application for admission may be obtained by mailing the postcard at the back of this catalog or writing to the Admissions Office, The Williamsport Area Community College, 1005 West Third Street, Williamsport, Pennsylvania 17701. The telephone number is (717) 326-3761, extension 237.

An application should be submitted as early as possible in the year in which you expect to enroll, but not more than one year in advance of that date. Preference will be given to applications received before March 1.

An interview is not required prior to submission of an application. However, if you need additional information or aid in selecting a course or program, you may arrange for a personal interview by writing or calling the Admissions Office at the address listed in the first paragraph. Requests for personal interviews should be made at least three weeks in advance of the date the interview is desired.

EARLY ADMISSIONS POLICY

An exceptional student who has completed the 11th grade in an accredited high school may be enrolled in a Liberal Arts Curriculum or Applied Arts Program of the College and, by satisfactorily completing the required college courses, will earn his or her Associate Degree within a two-year period.

It is expected that upon the satisfactory completion of the student's first year in the college program, the sponsoring high school will grant the student his or her normal high school graduation diploma.

EARLY ADMISSION PROCEDURE AND INFORMATION

In order to qualify for early admission, the following conditions must be met:

An application should be initiated by the student and his parents through the chief administrative officer of the sponsor high school. The administrator must submit the approved application to the Director of Admissions at the Williamsport Area Community College.

In considering applications for participation, the following will be required by the College:

Recommendation by the chief administrative officer of the sponsor high school indicating reasons for requesting early admission.

Official copy of student's transcript.

Evidence that the student meets the regular College requirements for enrollment in a specific program for which he is applying other than high school graduation.

TO BE ADMITTED YOU MUST – –

submit to the Admissions Office:

A completed application form with a $10 application fee. This fee is not refundable.

A transcript of your high school grades along with a recommendation from your high school counselor.

All Associate Degree candidates in the Schools of Liberal Arts and Sciences and Applied Arts and Sciences will be required to submit American College Testing (ACT) scores. Certificate candidates will be required to submit the results of the Career Planning Profile (CPP) rather than the ACT test scores. CPP is a new test administered under the American College Testing Program. The ACT scores and CPP results are necessary for planning appropriate programs and curricula. Students should take these tests late in the junior year or early in the senior year. Applications may be submitted prior to taking the tests.

Applicants for the School of Liberal Arts and Sciences must be available for an interview with an Admissions Counselor after submitting completed credentials.

Students who are accepted must submit a completed college Health Form prior to registration.

ADVANCED PLACEMENT AND CREDIT

Regular students who have completed advanced academic placement courses in high school and who pass appropriate placement examinations may be given advanced placement consideration toward a degree. A maximum of 15 credits can be acquired by such examinations. Credit will be given only with the consent of the Chairman of the Department and the Dean of the School concerned.

In some certificate programs, the College also recognizes skills training received by students coming from Area Vocational Technical Schools. Special advanced placement exams have been prepared for several of the certificate programs whereby the College can verify the degree of skill attained in high school where it parallels the beginning work in the College. Up to the equivalent of two semesters of shop-laboratory credit may be granted for such advanced placement. This will shorten the time required to complete these certificate programs.

In all applications for advanced academic placement and credit, the appropriate Dean and Department Chairman will consider additional information including the quality of the student's work in his secondary schooling. In all instances, the credit given will be in terms of courses corresponding to those which are part of regular curricula or programs of the College.

TRANSFER STUDENT

If you seek to transfer to The Williamsport Area Community College, you must submit an official transcript of the course work completed at any other college or university.

Courses for which transfer credit is sought will be evaluated by the appropriate Dean. A maximum of 30 credit hours may be transferred toward completing an Associate Degree. If you plan to graduate from The Williamsport Area Community College, the last semester must be completed at the College.

COUNSELING

One role of the community college is to assist you in making the often difficult transition from high school to the more rigorous demands of college study. The College maintains a full-time counseling staff for this purpose. This staff will counsel and guide you according to your respective aptitudes, abilities, and interests before and after you enroll.

Admissions counseling is provided to assist you to understand the various types of programs available in the College and to clarify matters which pertain to qualifications and prerequisites.

Vocational counseling is provided to help you if you wish additional assistance in selecting a vocational objective or field of study.

Academic advising is provided by a faculty advisor who will be designated to help you prepare class schedules and plan your academic program to meet your college transfer and career goals.

Personal counseling is provided based on your individual needs beyond the scope of admissions, vocational, or academic counseling.

VOCATIONAL DIAGNOSTIC PROGRAM

If you require intensive vocational counseling, you may take advantage of the three-week Vocational Diagnostic Program offered approximately eight times during the school year. This program is designed to assist you in career selection through aptitude testing, individual counseling, extensive vocational information and actual job trials in the various departments.

This service is available to you whether or not you plan to attend the College. For fees and additional information write:

Vocational Diagnostic Program
The Williamsport Area Community College
Williamsport, Pa. 17701
or phone Williamsport (717) 326-3761, ext. 241.

SPONSOR SCHOOL DISTRICTS

Bradford County
Canton Area
Troy Area

Clinton County
Keystone Central

Columbia County
Millville

Lycoming County
East Lycoming
Jersey Shore Area
Montgomery Area
Montoursville Area
South Williamsport Area
Williamsport Area

Northumberland County
Line Mountain
Warrior Run

Snyder County
Selinsgrove Borough
Midd-West

Sullivan County
Sullivan County District

Tioga County
Northern Tioga Area
Southern Tioga Area
Wellsboro Area

Union County
Mifflinburg Area

Sponsor School Board Members *meet with College administrators to plan educational opportunities for area citizens.*

TUITION AND FEES

APPLICATION FEE $10.00

A non-refundable application fee of $10.00 (required to be paid only once) must accompany your application.

CLASS RESERVATION DEPOSIT $50.00

In order to hold a class reservation, all full-time students will be required to make a $50.00 non-refundable class reservation deposit.

If the student enrolls at the designated time, the deposit will be credited toward his tuition.

If he does not enroll at this time, the deposit is non-refundable and cannot be carried forward to another semester.

TUITION AND RELATED FEES

The tuition and fees for a 16-week semester for the academic year 1972 - 1973 are as follows:

	Resident of Sponsor District	Resident of Non-sponsor District	Out-of-State Resident
Tuition	$197.50	$395.00	$592.50
Service Fee	None	124.00	248.00
Activity Fee	10.00	10.00	10.00
Lab Fee	10.00	10.00	10.00
Total	$217.50	$539.00	$860.50

If you are a resident of a sponsor district of The Williamsport Area Community College, after being notified that you have been accepted, you must have the secretary of your local school board complete a resident tuition form in order to be eligible for sponsor district tuition rates. This form should be mailed to the Business Office of the College as soon as possible prior to registration.

If you are a resident of a district which is a sponsor of some other Pennsylvania community college, you must obtain permission from the board of trustees of that particular college to qualify for sponsor district tuition. If this permission is not obtained in writing, it will be necessary for you to pay non-sponsor district tuition rate. If permission is obtained, tuition and fees will be:

Tuition	$197.50
Service Fee	124.00
Activity Fee	10.00
Lab Fee (if applicable)	10.00
Total	$341.50

Note: Tuition and Fees Subject to Change.

SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES:

Per credit tuition and fees for students in the School of Continuing Education and Community Services for the academic year 1972 - 1973 are as follows:

	Resident of Sponsor District	Resident of Non-sponsor District	Out-of-State Resident
Tuition	$16.50	$33.00	$49.50
Service Fee	None	10.50	21.00
Lab Fee (if applicable)	10.00	10.00	10.00
Total	$26.50	$53.50	$80.50

Note: Tuition and Fees Subject to Change.

SUMMER SCHOOL

The college conducts an eight-week summer school session beginning in mid-June and ending in early August. The tuition and fees are comparable to those of the School of Continuing Education and Community Services (see above.) For the purposes of entitlement, sponsor school districts count a summer session as one-half of a regular semester. The college's housing facilities are available to the students during the summer school session.

WITHDRAWALS AND REFUNDS

Charges for tuition are refundable upon official withdrawal from the College *(See Academic Regulations).*

Refunds of tuition will be made according to the following schedule for fall and spring semesters: *

1st week of classes	80% Refund
2nd week of classes	70% Refund
3rd week of classes	60% Refund

No refunds will be made after the third week of classes. Application, activity and service fees are not refundable.

*Summer School refunds are made on the following basis:

2½ days	80% Refund
1 week	70% Refund
1½ weeks	60% Refund

DORMITORY FACILITIES*

Women: Room cost in the dormitory (double occupancy) is $285.00 per semester.
Men: Cost for room and board per semester is $470.00 plus a $25.00 initial damage deposit which is refundable upon moving out of the dormitory.

LATE REGISTRATION

A late registration fee of $10.00 ir required if you do not complete registration on the days designated as registration days.

CHANGE OF COURSE

A change of course fee of $10.00 is required for all student-initiated schedule changes, except for dropping of classes.

TRANSCRIPTS

There is no charge for the first transcript requested by a student. There is a $1.00 fee for each additional transcript.

DIPLOMAS

There is a $3.00 fee to cover the cost of the diploma folder and an additional $1.00 cost for mailing.

BOOKS AND SUPPLIES

You must purchase all textbooks. Since it is the policy of the College to keep your expenses as low as possible, a College bookstore is operated on a low-cost basis.

All special and large tools will be supplied by the College. A list of required tools will be furnished by the instructors. Only personal tools required in the respective shops and laboratories must be purchased by you. Some shops and laboratories require their students to wear protective clothing. These articles may be purchased at the College book store on the same low-cost basis.

Estimated student expenses for books and supplies per semester averages $75.00.

Most of the essential items of college life, including textbooks, can be obtained at the campus bookstore.

*1972 - 73

FINANCIAL AID

WHAT FINANCIAL HELP IS AVAILABLE?

The Williamsport Area Community College's Financial Aid program operates in the following areas:

Scholarships
Loans
Educational Assistance for Veterans
Social Security Educational Assistance
Vocational Rehabilitation Assistance
Part-Time Employment

SCHOLARSHIPS

PENNSYLVANIA HIGHER EDUCATION ASSISTANCE AGENCY SCHOLARSHIPS (PHEAA)

The Pennsylvania Higher Education Assistance Agency awards scholarships to students on the basis of academic achievement and financial need.

Academic Scholarships are available to high school seniors entering two-year Associate Degree Programs at The Williamsport Area Community College. Selection of students will be determined by the Pennsylvania Higher Education Assistance Agency under current year fiscal policies. Applications are available in high school guidance offices. To be eligible for State Scholarship consideration, a student must be applying for a two-year program in the Applied Arts and Sciences field and leading to the associate degree or certificate.

Special Freshmen and Sophomore Scholarships are also available. Students and veterans enrolled in the sophomore year or students who enter the freshman class with a lapse of at least one year between high school graduation and college enrollment within the Commonwealth of Pennsylvania may be considered for a Scholarship award. These awards may be renewed from the freshman to the sophomore year upon the recommendation of the College. Applications for scholarships may be obtained from the College Financial Aid Office, the Pennsylvania Higher Education Assistance Agency in Harrisburg or from members of the Commonwealth of Pennsylvania General Assembly.

INDUSTRIAL AND FOUNDATION SCHOLARSHIP GRANTS

Numerous industries, funds, foundations, and clubs have sponsored students at The Williamsport Area Community College with grants covering all or a part of their tuition. In most instances, the recipients have been children of employees in the sponsoring company. A few of the more notable sponsors have been Hall's Motor Transit, Kline Foundation of Harrisburg, the Daniel K. Miller Fund of Reading, Philco-Ford Corporation at Watsontown, Sylvania Electric Products at York, Warren, and New Park, Pa., and Tastykake of Philadelphia. A more complete list may be obtained from the College's Financial Aid Officer.

LOANS

PENNSYLVANIA HIGHER EDUCATION ASSISTANCE AGENCY FEDERAL GUARANTY LOAN PROGRAM

The Pennsylvania Higher Education Assistance Agency administers the Federal Guaranty Loan Program. This program enables residents of Pennsylvania to borrow up to $1,500 per academic year from approved lending institutions in Pennsylvania to meet educational expenses. The student pays no interest on the loan until after graduation or withdrawal from the college, after which he must pay seven percent interest during the repayment period. Interest on this type of loan will be cancelled if the loan is repaid within nine(9) months after graduation.

After the student graduates from high school, he should contact a participating lending institution to initiate an application for a loan.

THE G. WALTER SMITH, JR. LOAN FUND

This loan fund was established in the memory of G. Walter Smith, Jr. Students who have attended the College for at least two semesters may apply for loans from this fund. Information and applications may be obtained from the Financial Aid Office.

THE SOROPTOMIST CLUB SCHOLARSHIP LOAN FUND

This scholarship loan fund was established to benefit freshmen and sophomore women students of The Williamsport Area Community College. Information and applications may be obtained from the Financial Aid Office.

EDUCATIONAL ASSISTANCE FOR VETERANS

The Williamsport Area Community College is an accredited college for the education of veterans as authorized by Public Laws 634, 815, 894, and 358.

A veteran who has served continuously on active duty for a period of at least 181 days, any part of which was after January 31, 1955, and who was discharged or released under conditions other than dishonorable, or any veteran who has served less than 181 days may be eligible if he was discharged or released because of service-connected disability.

Veterans may apply to the Veterans Administration Office for education or training under this program. Additional information may be obtained by writing to the Veterans Administration Office in Philadelphia, Pennsylvania. Applications are available at the Admissions Office.

On-campus counseling for veterans may be obtained at the WACC - PAVE* Office. PAVE counselors are veterans. The PAVE Office is located in the Klump Academic Center.

TUTORIAL ASSISTANCE FOR VETERANS

An enrolled veteran who is sustaining a failing grade in a subject may receive such individualized tutorial assistance as is necessary to correct the deficiency. This is a supplementary allowance and may not exceed 9 months ($450.)

SOCIAL SECURITY EDUCATIONAL ASSISTANCE

Financial assistance in varying proportions is available through the State Bureau of Vocational Rehabilitation for applicants who qualify. For further information concerning this program inquiries should be directed to the local State Bureau of Vocational Rehabilitation, 734 West Fourth Street, Williamsport, Pennsylvania.

WORK-STUDY PROGRAM

This is a Health, Education, and Welfare Department program that provides part-time employment for qualified students. Under this program, students who have financial need may work at college-oriented jobs. When classes are in session, students are allowed to work on the campus at various part-time jobs at the rate of $1.75 per hour. Types of jobs available are building and grounds maintenance, laboratory assistants, paper correctors, clerical, typing, security guard, kitchen help, and library assistants. This program is administered by the Financial Aid Office.

PART-TIME EMPLOYMENT

Because of changing times and conditions this type work is not always available. However, a list of such employment is maintained in the Placement Office and students use the office frequently for part-time work placement.

*Program for Advancement of Veterans' Education.

Klump
Academic
Center

SCHOOL OF LIBERAL ARTS AND SCIENCES

College Transfer Curricula

CURRICULA FOR YOU IF YOU PLAN —

To transfer to a four-year college or university.

To complete your college work with the attainment of the Associate of Arts or Associate of Science Degree.

To continue your training in an occupational field which has as a prerequisite two years of college.

COLLEGE TRANSFER CURRICULA

When The Williamsport Area Community College came into existence in 1965, the School of Liberal Arts and Sciences was established to provide two-year College Transfer Curricula for area students. In 1967, the College graduated its first class with Associate of Arts and Associate of Science degrees from the School of Liberal Arts and Sciences.

These College Transfer Curricula are meeting the needs of many capable students who desire a liberal education but cannot afford the tuition and living expenses of state-supported or private universities and colleges for more than two years. Other area residents are taking advantage of these Curricula to obtain two years of liberal education for personal enrichment. Many bright young people whose true potential didn't show itself in pre-college years will find numerous services to unlock this potential. For some, limited academic loads may be undertaken for a semester to allow students to prove themselves. For others, enrollment in the Developmental Program which is offered within the College of Liberal Arts and Sciences opens the doors to further academic or technical training at the collegiate level.

Achievement reports on students who graduated in the first class indicate that they competed effectively with those students who had spent the freshman and sophomore years in the four-year college. In fact, their performance was superior to the national average of community college transfer students. In view of the success of our graduates, expanded facilities, and a national trend for more and more students to spend their freshman and sophomore years in two-year community colleges, the School of Liberal Arts and Sciences anticipates increased opportunites to serve tomorrow's leaders.

PURPOSE

Courses in the College Transfer Curricula parallel the traditional freshman and sophomore courses offered in four-year colleges. You may complete the first two years of a four-year degree curriculum at The Williamsport Area Community College, then transfer to a four-year college or university to work toward a bachelor's degree.

COURSE CREDIT AND DEGREES

A credit is a measure of progress toward graduation. Satisfactory completion of each course earns for you a specified number of credits. You will need a minimum of sixty credits, exclusive of physical education, to earn an Associate of Arts or an Associate of Science degree in the School of Liberal Arts and Sciences.

TRANSFER PROCEDURES

The responsibility to determine whether you will meet the admissions requirements of the College to which you intend to transfer rests with you. To meet this responsibility you should:

Obtain a current catalog of the four-year college to which you plan to transfer and study its entrance requirements and its suggested freshman and sophomore curricula in the major field in which you are interested.

Confer with your Williamsport Area Community College faculty advisor immediately upon enrollment about fulfilling these requirements.

Confer, either by letter or by personal interview, with an admissions officer at the four-year college for further information about curriculum and transfer regulations.

Check carefully, two semesters before transfer, to be certain all requirements will be met and all regulations will be observed to the satisfaction of the four-year college.

Consult with your advisor if you plan to make a last-minute change in your major field of study or in your choice of a four-year college. Such changes may create problems in transferring.

Give careful consideration to the fact that the acceptance of credits for courses you will complete at The Williamsport Area Community College will be determined by the institution to which you plan to transfer. Courses numbered 100 or above in the College Transfer Curricula course listings in this catalog will generally be accepted for credit by four-year institutions.

DEAN SONDER ANSWERS THREE IMPORTANT QUESTIONS ABOUT THE SCHOOL OF LIBERAL ARTS AND SCIENCES:

DR. OTTO L. SONDER, JR.,
Dean of the School of Liberal Arts and Sciences

"WHAT IS THE PURPOSE OF A LIBERAL ARTS EDUCATION?"

A Liberal Arts education is a "liberating experience"—hence the term "liberal arts." The liberal education comes through a study of man's culture, his history, his arts and sciences. You will absorb new knowledge of old truths, assimilated and related anew to changed times. And, above all, your liberated mind will understand more fully that today's daring innovations are tomorrow's habits.

"WHAT SCHOOLS WILL ACCEPT STUDENTS FROM THE COMMUNITY COLLEGE?"

If your grades, motivation, and general college performance are good, you will have no difficulty transferring to an accredited four-year college. In fact, many of our recent graduates have gone to state colleges like Lock Haven, Mansfield, Bloomsburg, Clarion, and Millersville. Others have transferred to such schools as Cornell University, The University of Maryland, Lycoming College, Brigham Young University, The University of West Indies, PMC Colleges, and the largest single number has transferred to The Pennsylvania State University.

"HOW WELL DO TRANSFER STUDENTS FROM THIS SCHOOL SUCCEED AT OTHER COLLEGES?"

Very well, indeed. Many of our graduates have gone on to four-year institutions with outstanding success and with a sizable number maintaining a B average.

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LIBERAL STUDIES (LL)

College Transfer Curriculum
Associate Degree / Two Years

The Liberal Studies Curriculum offers you the first two years of a four-year program leading to a Bachelor of Arts Degree. This curriculum provides you with a broad base for further education and professional development in many career fields. Your explorations in English, foreign languages, mathematics, science, and the social sciences will help you discover your greatest interests and will have significant value in your vocation. Industry and business, professional schools, and government agencies are increasingly emphasizing the importance of a broad base of liberal arts subjects as the best preparation an undergraduate student can have.

FIRST SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 101 English Composition I	3	1	3
HIS 103 Western Civilization I	3	0	3
*Foreign Language	3-4	0	3-4
**Laboratory Science	3	3	4
†Elective	3	0	3
‡PE Physical Education	0	2	1
	15-16	6	17-18

SECOND SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 102 English Composition II	3	1	3
HIS 104 Western Civilization II	3	0	3
*Foreign Language	3-4	0	3-4
**Laboratory Science	3	3	4
†Elective	3	0	3
‡PE Physical Education	0	2	1
	15-16	6	17-18

THIRD SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 201 History of English Literature I	3	0	3
HIS 201 United States-Survey I	3	0	3
*Foreign Language	3-4	0	3-4
††Mathematics	3-5	0-1	3-4
†Elective	3	0	3
PE 109 Personal and Community Health	2	0	2
	17-20	0-1	17-19

FOURTH SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 202 History of English Literature II	3	0	3
HIS 202 United States-Survey II	3	0	3
*Foreign Language	3-4	0	3-4
††Mathematics	3-5	0-1	3-4
†Elective	3	0	3
‡PE Physical Education	0	2	1
	15-18	2-3	16-18

*Required: Two years of a Foreign Language or one year at the intermediate level (German and Spanish are available at the College).

**Required: Two semesters of one Laboratory Science (Biology, Chemistry, Geology, or Physics).

†Suggested Electives: Economics (three digit courses only), Geography, Government, Philosophy, Psychology, and Sociology.

††Required: One year of Mathematics other than MAT 100, 200, and 203 or any two digit MAT course.

‡Males: PE 105, 106, 107. 108
Females: PE 115, 116, 117, 118

Recommended High School Program - College Preparatory

MATHEMATICS-SCIENCE (LM)

College Transfer Curriculum

Associate Degree / Two Years

The Mathematics-Science curriculum offers the first two years of a four-year program leading to a baccalaureate degree with concentration in either mathematics or science. This program will prepare you for advanced study in the fields of science or mathematics, whether it be for entry into industry, teaching, medicine, dentistry or related fields. All students, whether concentrating in specific areas of mathematics or science, normally take similar courses of study the first two years and specialize during their junior and senior years.

FIRST SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 101 English Composition I	3	1	3
*Laboratory Science	3	3	4
**Mathematics	3-5	0-1	3-4
†Electives	6	0	6
‡PE Physical Education	0	2	1
	15-17	6-7	17-18

SECOND SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 102 English Composition II	3	1	3
*Laboratory Science	3	3	4
**Mathematics	3-5	0-1	3-4
†Electives	6	0	6
PE 109 Personal and Community Health	2	0	2
	17-19	4-5	18-19

THIRD SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 201 History of English Literature I	3	0	3
*Laboratory Science	3	3	4
**Mathematics	3-5	0-1	3-4
†Elective	3	0	3
††Elective	3-5	0	3-4
‡PE Physical Education	0	2	1
	15-19	5-6	17-19

FOURTH SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 202 History of English Literature II	3	0	3
*Laboratory Science	3	3	4
**Mathematics	3-5	0-1	3-4
†Elective	3	0	3
††Elective	3-5	0	3-4
‡PE Physical Education	0	2	1
	15-19	5-6	17-19

*Laboratory Sciences (Biology, Chemistry, Geology, or Physics)

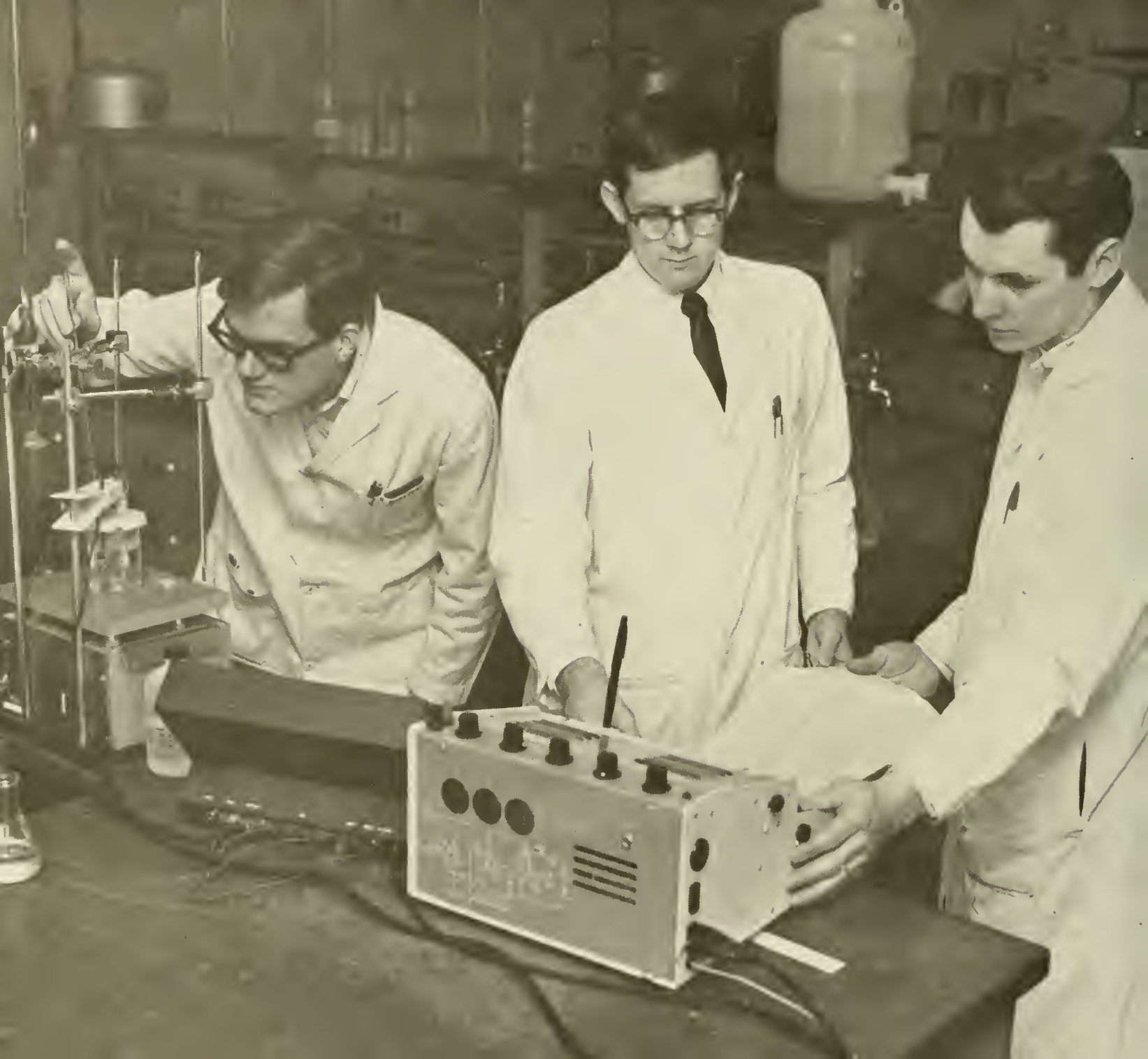
**Mathematics (MAT 103, 104, 111, 112, 201, 211, 212,). Credit may not be earned for taking MAT 100, 200, 203, or any two digit MAT courses.

†Suggested Electives: Economics (three digit courses only), Geography, Government, Philosophy, Psychology, and Sociology.

††This elective includes Mathematics other than stated above, Laboratory Science, or Foreign Language (German and Spanish are available at the College).

‡Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

Recommended High School Program: College Preparatory, which includes two years of Algebra, one year of Geometry, Biology, and Chemistry.



PRE-ENGINEERING (LE)

College Transfer Curriculum

Associate Degree / Two Years

This curriculum offers you many of the general and specialized courses needed in most engineering programs, including mathematics, chemistry, physics, English, basic engineering courses, and career and social development electives. It is necessary for you to have a strong background in mathematics and science to elect this program which is basic to many engineering fields: aeronautical, chemical, civil, electrical, industrial, sanitary, mechanical, and nuclear. Your specialization in engineering will begin in your third and fourth years of college. NOTE: Engineering courses will be offered only on sufficient student demand.

FIRST SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 101 English Composition I	3	1	3
MAT 112 Calculus I	5	0	4
PHY 105 General Physics I	3	3	4
EGR 201 Graphics	2	3	3
†PE Physical Education	0	2	1
	13	9	15

SECOND SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 102 English Composition II	3	1	3
MAT 211 Calculus II	5	0	4
PHY 106 General Physics II	3	3	4
*Elective	3-4	0	3-4
**Elective	3	0-3	3-4
PE 109 Personal and Community Health	2	0	2
	19-20	4-7	19-21

THIRD SEMESTER

Course	Hours/Week Lect.	Lab	Credits
CHE 103 General Chemistry I	3	3	4
EGR 200 Statics	3	0	3
*Elective	3-4	0	3-4
**Electives	6	0-6	6-8
†PE Physical Education	0	2	1
	15-16	5-11	17-20

FOURTH SEMESTER

Course	Hours/Week Lect.	Lab	Credits
CHE 104 General Chemistry II	3	3	4
MAT 212 Calculus III	5	0	4
EGR 210 Dynamics	3	0	3
*Elective	3-4	0	3-4
**Elective	3	0-3	3-4
†PE Physical Education	0	2	1
	17-18	5-8	18-20

*Economics (three digit courses only), Foreign Language (German and Spanish are offered at the College), Geography, Government, History, Philosophy, Psychology, and Sociology.

**Science (Biology; Chemistry other than CHE 103, 104; Geology; Physics-three digit courses only); Computer Science, CSC 101; Pre-Engineering other than EGR 200, 201, 210; Mathematics, MAT 201, 220.

†Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

Recommended High School Program - College Preparatory

EDUCATION-SOCIAL WORK (LD)

College Transfer Curriculum

Associate Degree / Two Years

This curriculum offers you the first two years of a four-year program leading to a baccalaureate degree with concentration in either Education or Social Work. In the four-year college to which you transfer, you may specialize in elementary or secondary teaching, school administration, guidance and counseling, and various areas of social work or related fields.

FIRST SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 101 English Composition I	3	1	3
HIS 201 United States-Survey I	3	0	3
*MAT 100 Fundamentals of Mathematics I	3	0	3
PSY 101 General Psychology	3	0	3
**Elective	3	0	3
‡PE Physical Education	0	2	1
	15	3	16

SECOND SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 102 English Composition II	3	1	3
HIS 202 United States-Survey II	3	0	3
*MAT 200 Fundamentals of Mathematics II	3	0	3
SOC 101 Introduction to Sociology	3	0	3
**Elective	3	0	3
PE 109 Personal and Community Health	2	0	2
	17	1	17

THIRD SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 201 History of English Literature I	3	0	3
†Laboratory Science	3	3	4
EDU 201 Introduction to Education	3	0	3
MAT 203 Elementary Statistics	3	0	3
††Elective	3-4	0	3-4
‡PE Physical Education	0	2	1
	15-16	5	17-18

FOURTH SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 202 History of English Literature II	3	0	3
†Laboratory Science	3	3	4
PSY 202 Educational Psychology	3	0	3
††Electives	6-8	0	6-8
‡PE Physical Education	0	2	1
	15-17	5	17-19

*If qualified, you may take MAT 103, 104 or other three digit MAT courses in lieu of MAT 100 and 200. You may take MAT 201 in lieu of MAT 203. To determine your qualifications, consult the Chairman of the Mathematics Department.

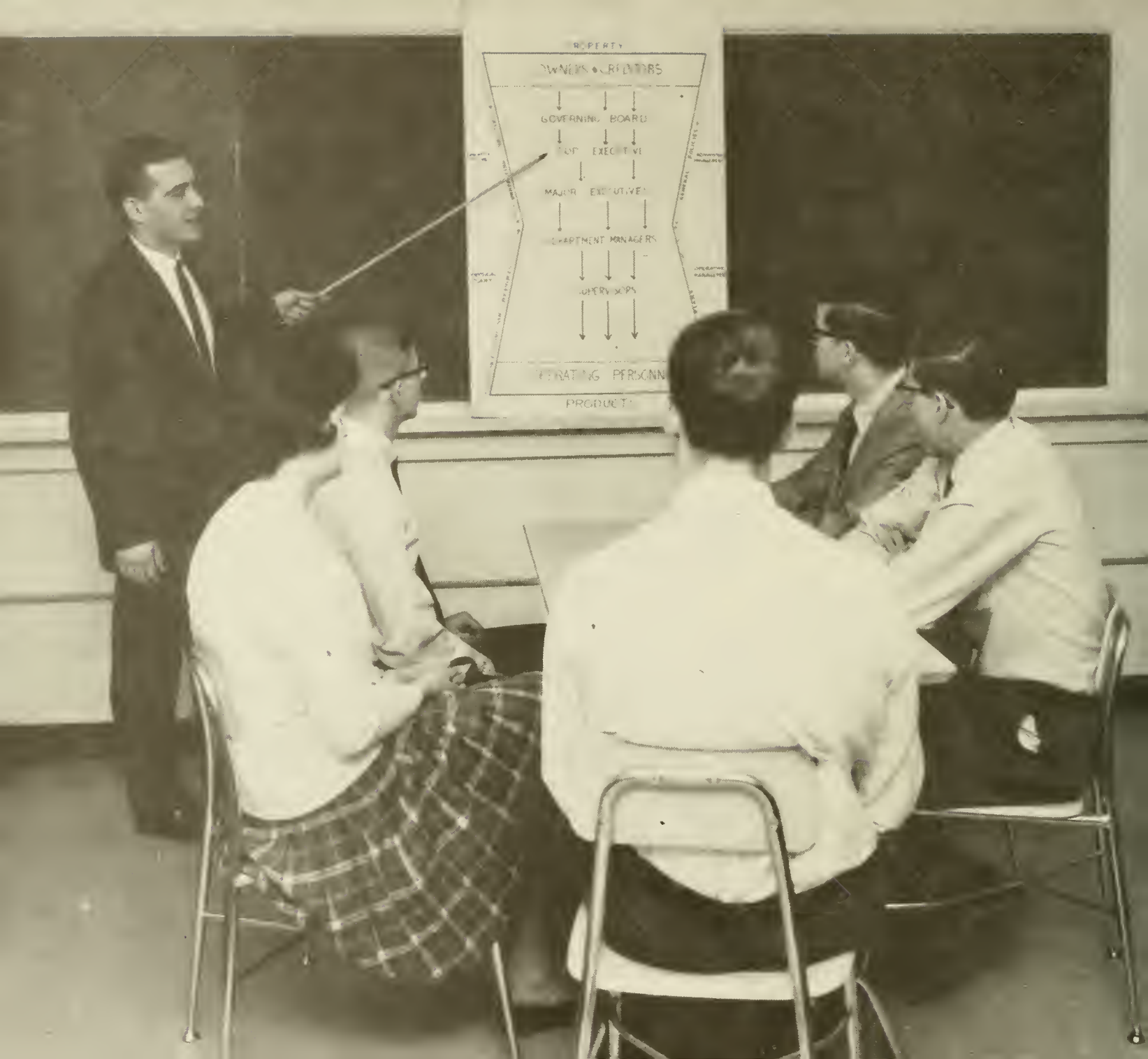
**Suggested Electives: Geography or Philosophy

†Required: Two semesters of one Laboratory Science (Biology, Chemistry, Geology, or Physics).

††Sociology courses are suggested for the Social Work objectives. For Education students, other acceptable electives are Economics (three digit courses only) or Government, and for the third and fourth semesters, History and Psychology. For Education students wishing to teach Foreign Languages, German or Spanish may be elected.

‡Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

Recommended High School Program: College Preparatory.


GOVERNING BOARD
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MANAGERS
PRODUCTS

BUSINESS ADMINISTRATION (LB)

College Transfer Curriculum

Associate Degree / Two Years

The Business Administration curriculum offers you the first two years of a four-year program leading to a baccalaureate degree in Business Administration. This basic curriculum is designed to give you an educational foundation that will allow you to perform and grow in the dynamic and complex field of business. Specialized business oriented courses and a significant number of liberal arts courses provide the necessary background for future study in business administration at a four-year college. Possible major fields open to you after transfer include accounting, economics, finance, foreign commerce, economic geography, industrial management, personnel management, insurance, marketing and real estate.

FIRST SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 101 English Composition I	3	1	3
HIS 201 United States-Survey I	3	0	3
*Mathematics or **Laboratory Science	3-4	0-1	3-4
ECO 201 Principles of Economics	3	0	3
†Elective	3	0	3
††PE Physical Education	0	2	1
	15-16	3-4	16-17

SECOND SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 102 English Composition II	3	1	3
HIS 202 United States-Survey II	3	0	3
*Mathematics or **Laboratory Science	3-4	0-1	3-4
ECO 202 Economic Analysis	3	0	3
†Elective	3	0	3
PE 109 Personal and Community Health	2	0	2
	17-18	1-2	17-18

THIRD SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 201 History of English Literature I	3	0	3
MAT 201 Statistical Analysis I	3	0	3
BUS 201 Principles of Accounting I	3	0	3
BUS 250 Business Law I	3	0	3
CSC 101 Introduction to Computer Science	3	0	3
††PE Physical Education	0	2	1
	15	2	16

FOURTH SEMESTER

Course	Hours/Week Lect.	Lab	Credits
ENG 202 History of English Literature II	3	0	3
BUS 202 Principles of Accounting II	3	0	3
BUS 251 Business Law II	3	0	3
†Electives	6	0	6
††PE Physical Education	0	2	1
	15	2	16

*Consult the Chairman of the Mathematics Department to determine the appropriate course in which to enroll. If your mathematics background is strong, you may select the Laboratory Science option. Usual mathematics sequence would be MAT 103, MAT 104, and MAT 201.

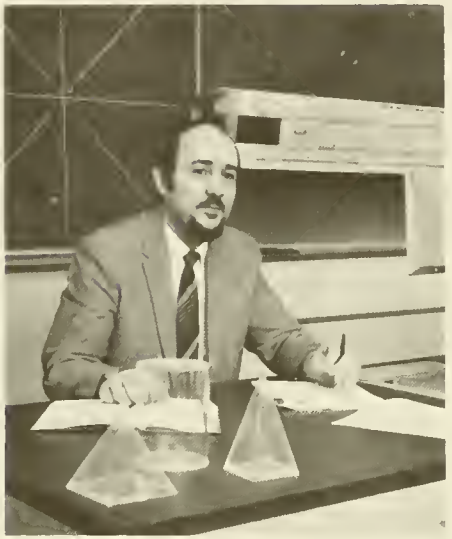
**Required: Two semesters of one Laboratory Science (Biology, Chemistry, Geology, or Physics).

†Suggested Electives: Economics (three digit courses only), Geography, Government, History, Philosophy, Psychology, and Sociology.

††Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

Recommended High School Program: College Preparatory.

SCHOOL OF LIBERAL ARTS AND SCIENCES / Chairmen



ENGLISH, SPEECH ARTS, FOREIGN LANGUAGES, PHILOSOPHY
James E. Logue, Chairman

HISTORY AND GOVERNMENT
G. Robert Kissell, Chairman

MATHEMATICS
Dan C. Farris, Chairman

NATURAL SCIENCES
Ronald E. Thompson, Chairman

PHYSICAL EDUCATION
Thomas E. Vargo, Chairman

SOCIAL SCIENCES (ECONOMICS, EDUCATION, PSYCHOLOGY, SOCIOLOGY), BUSINESS ADMINISTRATION
Paul Feng, Chairman

DEVELOPMENTAL PROGRAM
C. William Morris, Director

NUMBERING SYSTEM

Courses numbered in the 100 series are generally taken in your first year; in the 200 series, your second year.

The number following the course description shows the number of credits* assigned to each course. The first number in the parentheses indicates the number of lectures per week and the second number the number of laboratory hours per week. The last number, where present, indicates the total number of lecture and laboratory hours per semester. This latter number is used for courses that are applicable to Certificate Programs of the School of Applied Arts and Sciences and the College's Developmental Program.

Examples: ART 101 Appreciation and Aesthetics 3(3-0)
MAT 11 Basic Algebra 3(3-0), 48 Hrs.

The courses offered in the College Transfer Curricula are arranged alphabetically by subject areas, and the descriptions include prerequisites. Most courses numbered within the 100 and 200 series are designed for transfer toward a four-year baccalaureate degree.

*For two-digit courses this number also represents "Units", a term used in the Certificate Programs of the School of Applied Arts and Sciences and is correlative to credits.

COURSE DESCRIPTIONS / *college transfer curricula*

ART

Art study is designed to develop your appreciation of works of art as a lasting enrichment to your life. Through such study you will experience the fine arts as a means of creative expression, you will better understand how art has mirrored man throughout history, and you will gain insight into the relationship between art and your other studies. You will begin to comprehend the importance of art in everyday living and the influence of art in the development of different cultures. You will be prepared for further artistic experiences as a continuing student or as an enlightened individual.

ART 101 — APPRECIATION AND AESTHETICS

Art history in which appreciation and aesthetic judgment of historic and contemporary art forms are goals. Understanding of the fine arts through critical analysis of selected works in architecture, painting, and sculpture allied with varied philosophical, cultural, iconographic, technical, and visual approaches. Particular emphasis given to historical, sociological, and formal approaches to the arts. 3(3-0).

Note: Course work in Art is not offered at present, but may be transferred from another college.

BIOLOGY

Biology expresses the unity of the living world and man's place in it. The excitement and intellectual appeal of this science are represented by the deciphering of the genetic "code." the penetration into the unknown of the ocean, and the emergence of the orderly pattern of form, function, and behavior of organisms.

Courses in biology have been designed to meet a variety of vocational as well as intellectual objectives. They will provide you with the necessary scientific foundation if you are interested in such varied fields as laboratory technology, pharmaceutical sales, teaching, technical writing or editing, human or veterinary medicine, dentistry, biological or medical research, genetics, marine biology, physiology or molecular biology, medical illustration, technical librarianship, or nursing. Even if your major interest lies outside biology, these courses will have lasting cultural value.

BIO 03 BOTANY (HORTICULTURE)

A course in which the fundamentals of plant science, plant anatomy, physiology, taxonomy, reproduction, and genetics are studied. 3(2-3), 48 Hrs.

BIO 100 INTRODUCTION TO MODERN COLLEGE BIOLOGY

One-semester course to prepare students having weak science backgrounds for freshman biology. May also be elected by those interested in increasing awareness of topics in modern biology. No Credit (3-0).

BIO 101 GENERAL BIOLOGY I

Fundamental processes of living organisms. Main concepts of biology are developed beginning with considerations of the chemical basis of life. Structure, function, and evolution of cells. 4(3-3).
Prerequisite: None.

BIO 102 GENERAL BIOLOGY II

Continuation of BIO 101. Structure, function, interrelationships, and evolution of organisms. 4(3-3).
Prerequisite: BIO 101 or permission of the instructor.

BIO 105 ANATOMY AND PHYSIOLOGY OF MAN I

A medically oriented study of the structure and function of the human body. Intended for students specializing in nursing, medical technology, and biology. Lecture and laboratory. 4(3-3).
Prerequisite: None.

BIO 106 ANATOMY AND PHYSIOLOGY OF MAN

Continuation of BIO 105. 4(3-3).
Prerequisite: BIO 105.

BIO 201 MICROBIOLOGY

Biology of microorganisms including bacteria, rickettsiae, viruses, fungi, protozoa, and helminths. Relationships between microorganisms and higher forms of life. 4(3-3).
Prerequisite: BIO 102.

BIO 202 INVERTEBRATE ZOOLOGY

Morphology, taxonomy, physiology, and life histories of invertebrates. 4(3-3).
Prerequisite: BIO 102.

BIO 203 GENERAL BOTANY

Introduction to plant physiology, plant life cycles, and plant taxonomy. 4(3-3).
Prerequisite: BIO 102.

BIO 206 VERTEBRATE ZOOLOGY

Life cycles, adaptations, ecology, taxonomic relationships, with major emphasis on physiology of the vertebrates. 4(3-3).
Prerequisite: BIO 101.

BIO 208 ECOLOGY

This course includes the basic principles of the relationships of plants and animals to their environments. Physical factors, energy and chemical cycles in the ecosystem, population and community characteristics, ecological succession, aquatic and terrestrial ecology are discussed. Local terrestrial and aquatic environments are investigated. 4(3-3).
Prerequisite: One semester of college level Biology.

BIO 290 SPECIAL STUDIES IN BIOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1 to 3 (Laboratory as required).

BUSINESS ADMINISTRATION

Two semesters of both accounting and business law will give you a firm background for your understanding of further specialized courses in a business curriculum. Your practice with data processing equipment will add valuable experience to your classroom work and will provide you with a balance between theory and experience which will play an integral part in your total education. A major aim of these courses is to provide you with an understanding of the complex relationships existing within business organizations.

BUS 201 PRINCIPLES OF ACCOUNTING I

Fundamental theory. Current concepts and standards of recording, classifying, summarizing and interpreting business activity through accounting. Practice in analysis and interpretation of financial position of business organization. 3(3-0).
Prerequisite: None.

BUS 202 PRINCIPLES OF ACCOUNTING II

Continuation of BUS 201. 3(3-0).
Prerequisite: BUS 201.

BUS 250 BUSINESS LAW I

Survey of English and American business law, with special attention to contracts and including an introduction to property, crimes, and torts. 3(3-0).
Prerequisite: None.

BUS 251 BUSINESS LAW II

Laws pertaining to real and personal property, landlord and tenant, sales of goods, and negotiable instruments. 3(3-0).
Prerequisite: BUS 250.

CHEMISTRY

Chemistry is the study of matter and energy and the changes that matter undergoes. An understanding of chemistry is essential for careers in the areas of medicine, biology, engineering, home economics, geology, meteorology, and astronomy and is useful for careers in such areas as industry, law, architecture, and geography.

CHE 100 INTRODUCTION TO CHEMISTRY

Intended for students who have not studied chemistry in high school and for those needing additional study before attempting college chemistry: basic principles and theories.
No credit (3-0).

CHE 101 GENERAL CHEMISTRY I

Introductory study of the fundamental laws and theories of chemistry. Topics include atomic structure, bonding, stoichiometry, physical states of matter and changes of state, solutions, kinetics and equilibrium, electrochemistry and nuclear chemistry. Some time may be devoted to introductory organic chemistry. Course is intended for non-science students. Students intending to major in science should take CHE 103, but may take CHE 101 to strengthen their background. 4(3-3).

CHE 102 GENERAL CHEMISTRY II

Major emphasis is on introductory treatment of structures and characteristic reactions of major classes of organic compounds. Time may be devoted to elementary biochemistry. Course is intended for non-science majors, but may be taken by prospective science majors to strengthen their background. 4(3-3).
Prerequisites: CHE 101, or one year of high school chemistry and permission of the instructor.

CHE 103 ADVANCED GENERAL CHEMISTRY I

Rigorous study of the principles of modern chemistry. Topics include atomic structure, bonding, states of matter and phase transitions, stoichiometry and spectroscopy. 4(3-3).
Prerequisite: CHE 101 or one year of high school chemistry; high school algebra.

CHE 104 ADVANCED GENERAL CHEMISTRY II

Continuation of CHE 103. Topics include physical and chemical properties of solutions, acid-base theory, electrochemistry, thermodynamics, and nuclear reactions. Some time may be devoted to introductory organic chemistry. 4(3-3).
Prerequisite: CHE 103 or permission of the instructor.

CHE 201 QUANTITATIVE ANALYSIS

Theory and practice of classical methods of gravimetric and volumetric analysis. Some instrumentation employed. Emphasis upon accurate lab work and problem solving. 4(2-6).
Prerequisites: One year of general college chemistry or one semester of college chemistry and permission of the instructor.

CHE 203 ORGANIC CHEMISTRY I

Principle classes of organic molecules, structures and reactions, with emphasis on mechanism. 4(3-3).
Prerequisite: CHE 104, or CHE 101 and permission of the instructor.

CHE 204 ORGANIC CHEMISTRY II

Emphasis on properties and reactions of aromatic compounds and biochemicals. 4(3-3).
Prerequisite: CHE 203

CHE 205 ADVANCED INORGANIC CHEMISTRY

Modern theories of inorganic chemistry. Introductory quantum mechanics; Lewis structures, molecular geometry, molecular orbital theory, transition metal complexes and crystal field theory, electron-deficient molecules, periodic properties of elements. 4(3-3).
Prerequisites: CHE 104 or equivalent; knowledge of elementary differential and integral calculus.

CHE 290 and 291 SPECIAL TOPICS IN CHEMISTRY

A flexible course designed to meet special needs or interests of chemistry students. Lectures on advanced material and/or special laboratory projects. 1-3(1 to 3, lab as required).
Prerequisite: Permission of the instructor.

COMPUTER SCIENCE

The following Computer Science course is available to students of the School of Liberal Arts and Sciences and is offered through the Computer Science Department of the School of Applied Arts and Sciences.

CSC 101 INTRODUCTION TO COMPUTER SCIENCE

Concepts of data processing systems, methods and applications; programming languages and program structures; FORTRAN IV programming language; problem analysis; flowcharting and computer solution of numerical and non-numerical problems. 3(3-0).
Prerequisite: Three (3) units of high school mathematics.

ECONOMICS

Economics investigates conditions and laws affecting production, distribution, and consumption of wealth. You need a strong background in economics if your career lies in law, business, industry, or teaching social studies.

ECO 02 FUNDAMENTALS OF ECONOMICS

Fundamentals of American economy: attributes of capitalism; production, distribution and consumption of goods and services; consumer demand; money and banking in United States; employment; labor problems; personnel policies in modern industry. 3(3-0), 48 Hrs.
Prerequisite: None.

ECO 11 BASIC ECONOMICS

Basic principles of our economy: American capitalistic system; business cycles; investments; stock market operation; personnel policies and procedures. 3(3-0), 48 Hrs.
Prerequisite: None.

ECO 46 BUSINESS ECONOMICS

Group problems involving national economy; labor laws, financial policies, and personnel; income, employment, business fluctuations, and economic analysis. 3(3-0), 48 Hrs.
Prerequisite: None.

ECO 201 PRINCIPLES OF ECONOMICS

An introductory course dealing primarily with the United States economy, its make-up and problems. 3(3-0).
Prerequisite: None.

ECO 202 ECONOMIC ANALYSIS

A study of the theory of the firm, and analysis of economic problems involved in public policy decisions. Required of students following the business administration curriculum, or intending to major in economics. 3(3-0).
Prerequiste: ECO 201.

ECO 203 INTERNATIONAL ECONOMICS

Study of current problems in international trade and finance with emphasis on the gold question and the balance of payments. 3(3-0).
Prerequisite: 202, or permission of the instructor.

ECO 204 COMPARATIVE ECONOMIC SYSTEMS

Analysis of current economic systems, their theory and practice. 3(3-0).
Prerequisite: ECO 201, or permission of the instructor.

ECO 205 PERSONNEL RELATIONS

Concepts and cases dealing with human beings in industry and business. 3(3-0).
Prerequisite: None.

ECO 290 SPECIAL STUDIES IN ECONOMICS

A flexible course designed to meet special needs of economic students. 1 to 3(3-0).
Prerequisite: Permission of the instructor.

EDUCATION

Courses in education are designed for students who intend to teach in public schools. The introductory course is a basic requirement if you intend to major in education.

EDU 102 CHILDREN'S AND YOUNG ADULTS' LITERATURE

Comprehensive survey of children's and young adults' literature. Designed to provide a basic knowledge and understanding of authors, illustrators, and literary forms as background for work in a public area. 3(3-0).
Prerequisite: None.

EDU 201 INTRODUCTION TO EDUCATION

Foundations of education: historical, economic, philosophical, and social. Their implications for present-day education. 3(3-0).
Prerequisite: None.

ENGLISH AND SPEECH

The skills you acquire in writing and speaking will be essential to your success in further college work and chief among the talents you will use as an educated person. Survey courses in literature will bring you an understanding of the value of that art as a means of creative expression.

ENG 03 COMMUNICATIONS I

Practice in written composition through examination of literary forms: the essay and the short story, and studies in the English language. Development of speech skills through individual and group presentations of related material. No Credit, 3 Units(3-1), 48 Hrs.
Prerequisite: None.

ENG 04 COMMUNICATIONS II

Continuation of ENG 01 with further practice in oral and written composition. Examination of drama and the film. Studies in the mass media. No Credit, 3 Units(3-1), 48 Hrs.
Prerequisite: ENG 01.

ENG 10 BASIC ENGLISH

Intensive review of English grammar and the basic principles of composition. No Credit (3-0), 48 Hrs.
Prerequisite: None.

ENG 11 LANGUAGE AND COMPOSITION I

Principles of expository writing through examination of literary forms; the essay and the short story, and study of the history of the English language. Development of speech skills through individual and group presentations of related material. (3-1), 48 Hrs.
Prerequisite: None.

ENG 12 LANGUAGE AND COMPOSITION II

Continuation of ENG 11 with writing of expository and critical essays. Further development of speech skills. Examination of poetry, drama, and the film. Principles of research. 3(3-1), 48 Hrs.
Prerequisite: ENG 11.

ENG 13 TECHNICAL WRITING

Intensive survey of technical writing with practice in preparing reports for business and industry. 3(3-0), 48 Hrs.
Prerequisites: ENG 12 or Equivalent.

ENG 14 SPEECH

Practice in group discussion, critical listening, parliamentary procedure, oral reporting. 3(3-0), 48 Hrs.
Prerequisite: None.

ENG 101 ENGLISH COMPOSITION I

Basic composition involving language structure, rhetorical principles, orderly, clear writing, and readings in expository prose. 3(3-1).
Prerequisite: None.

ENG 102 ENGLISH COMPOSITION II

Continues the writing principles of ENG 101 and includes the study of other modes of expression. 3(3-1).
Prerequisite: ENG 101.

ENG 105 SHORT STORY WRITING

Development of skills in writing imaginative prose and in presenting short stories for class criticism and review. 3(3-0).
Prerequisite: None.

ENG 201 HISTORY OF ENGLISH LITERATURE I

The works of major English writers from Chaucer to the beginning of the Romantic Period with emphasis upon intellectual, political and literary developments. 3(3-0).
Prerequisite: ENG 102.

ENG 202 HISTORY OF ENGLISH LITERATURE II

The works of major English writers from the Romantic Period to the Modern with emphasis upon intellectual, political and literary developments. 3(3-0).
Prerequisite: ENG 201.

ENG 211 FUNDAMENTALS OF SPEECH

Basic physiology of speech. Oral reading; composition and delivery of expository speeches for different types of audiences. 3(3-0).
Prerequisite: None.

ENG 212 SPEECH - DEBATING

Group thinking and debate as methods of solving contemporary problems. Case histories provide materials for analysis, interpretation, and evaluation. Preparation for intercollegiate debating. 2(2-0).
Prerequisite: None.

ENG 250 WORLD LITERATURE I

The reading of literature expressing western man's belief in the paramount importance of the individual. 3(3-0).
Prerequisite: ENG 102.

ENG 251 WORLD LITERATURE II

Continuation of ENG 250. Includes a survey of representative works of continental Europe to the present. 3(3-0).
Prerequisite: ENG 250.

ENG 290 SPECIAL STUDIES IN ENGLISH

Individual guidance in advanced studies. Admission by permission of the instructor. 1 to 3(1 to 3-0).

ENVIRONMENTAL SCIENCE

The following course in Environmental Science is offered as an elective to students in the School of Applied Arts and Sciences.

ESC 10 ENVIRONMENTAL SCIENCE

Designed especially for the non-science student who wants to develop an ability to understand environmental systems and problems from a scientific rather than an emotional viewpoint. The course covers many aspects of land, water, and air pollution and its relation to living organisms, especially man. 3(3-0).

FRENCH

The object of these courses is to give you a working knowledge of the French language and to provide you with a tool for the study of higher level French courses in the college or university to which you transfer.

FRE 101 BEGINNING FRENCH I

Basic grammar and language structure. Comprehension, speaking, and reading, with particular regard to pronunication and accent. 4(4-0).
Prerequisite: None.

FRE 102 BEGINNING FRENCH II

Continuation of FRE 101. 4(4-0).
Prerequisite: FRE 101.

FRE 201 INTERMEDIATE FRENCH I

Review of grammar, with readings on intermediate level. Increased command of the language. 3(3-0).
Prerequisite: FRE 102

FRE 202 INTERMEDIATE FRENCH II

Continuation of FRE 201. 3(3-0).
Prerequisite: FRE 201.

Note: Course work in French is not offered at present, but may be transferred from another college.

GEOGRAPHY

Studies in geography aim to develop your knowledge and appreciation of the physical and cultural aspects of man's habitat. Because a student does not usually achieve geographic literacy before reaching college, the college offers the following courses which include in-depth study for geography majors and prospective secondary teachers of the social sciences.

GEO 101 PHYSICAL GEOGRAPHY

Introduction to topographic maps, landforms, weather elements, climates, soils, and vegetation. 3(3-0).
Prerequisite: None.

GEO 102 GEOGRAPHY OF THE UNITED STATES

Systematic geographic landforms, climates, vegetation, soils, population, and economics of the United States. 3(3-0).
Prerequisite: GEO 101 or permission of the instructor.

GEO 103 CULTURAL GEOGRAPHY

Past and present reasons for location of current cultural societies of the world. 3(3-0).
Prerequisite: GEO 101 or permission of the instructor.

GEO 104 SOUTH AMERICA AND ITS PEOPLE

Factors influencing the localization of populace of South America. 3(3-0).
Prerequisite: None

GEO 201 POLITICAL GEOGRAPHY

Parameters that combine to determine present world political geographies. 3(3-0).
Prerequisite: None.

GEO 290 SPECIAL STUDIES IN GEOGRAPHY

Special attention to particular abilities and interests of students. Individual guidance in geographic studies. Admission by permission of the instructor. 1 to 3 (1 to 3-0).

GEOLOGY

Geology is the science that deals with the study of the earth as well as celestial bodies. The profession of geology, which consists of some 22 interdependent areas, is concerned with the study and interpretation of the geologic agents and physical and chemical processes that act independently and collectively to change the earth's configuration. Some major areas of current geologic research are oceanography, astrogeology, landscapes, mineral deposits, volcanoes, glaciers, continental drift, seafloor spreading, and plate tectonics.

GEL 105 PHYSICAL GEOLOGY

Basic concepts in the study of the Earth; relationships between Earth materials and the geologic agents and processes that create and modify minerals, rocks, landforms, continents and the ocean basins. 4(3-3).
Prerequisite: None.

GEL 106 HISTORICAL GEOLOGY

Origin of the Earth and the evolution of its crust and the development and evolution of life thereon; relationships among rock units as evidence for geologic history; fossils as documents of evolution, chronology and environment; relative and absolute age dating of the Earth. 4(3-3).
Prerequisite: GEL 105

GEL 107 PENNSYLVANIA GEOLOGY

Stratigraphy, structure, and geomorphology of Pennsylvania. Practicum covers geologic and topographic maps of Pennsylvania; with field trips to complement the classroom sessions. 3(3-0).
Prerequisite: GEL 105.

GEL 204 GEOHYDROLOGY

Theory of ground water flow, distribution, and occurrence of ground water. 3(3-0).
Prerequisites: GEL 105, MAT 211, and CHE 102.

GEL 206 INTRODUCTORY MINERALOGY

Basic principles of crystallography and mineralogy; crystal structure, physical and chemical properties of minerals, occurrences and use of minerals, identification and classification of minerals. 4(3-3).
Prerequisite: CHE 101 or permission of the instructor.

GEL 208 GEOMORPHOLOGY

Description and analysis of the physical and chemical processes involved in the evolution of the present landscape; special emphasis on fluvial geomorphology. Introduction to regional geomorphology. 4(3-3).
Prerequisite: GEL 105 or permission of the instructor.

GEL 290 SPECIAL STUDIES IN GEOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1 to 3 (Laboratory as required).

GERMAN

The courses in the German language are designed to provide a working knowledge of sufficient quality to enable you to enter higher level German courses in the college or university to which you will transfer.

GER 101 BEGINNING GERMAN I

Basic grammar and language structure. Comprehension, speaking and reading, with particular regard to pronunciation and accent. 4(4-0).
Prerequisite: Permission of the instructor.

GER 102 BEGINNING GERMAN II

Continuation of GER 101. 4(4-0).
Prerequisite: GER 101.

GER 201 INTERMEDIATE GERMAN I

Review of grammar, with readings on intermediate level. Increased command of the language. 3(3-0).
Prerequisite: GER 102.

GER 202 INTERMEDIATE GERMAN II

Continuation of GER 201. 3(3-0).
Prerequisite: GER 201.

GOVERNMENT

The government courses are basically designed to offer you explanation and discussion of the governmental process, voting behavior, and the power structure of a society. Effort is devoted to a systematic examination of the governmental process in the United States and in other nations. These courses are not only concerned with formal governmental structure, but also with political behavior and political culture in which governmental institutions operate.

GOV 201 AMERICAN GOVERNMENT – NATIONAL

Federal government, its powers and organization. Functions of legislative, executive and judicial branches. Our federal system as it has developed. 3(3-0).
Prerequisite: None.

GOV 202 STATE AND LOCAL GOVERNMENT

State and local governmental institutions, their functions and responsibilities; intergovernmental relations. 3(3-0).
Prerequitite: None.

GOV 205 COMPARATIVE GOVERNMENT I

Political systems of Great Britian, France, the Soviet Union, and Germany; constitutions, parties, electoral methods, legislatures, executive, and judicial systems. 3(3-0).
Prerequisite: Permission of the instructor.

GOV 206 COMPARATIVE GOVERNMENT II

Theory and practice of Democracy and Totalitarianism. Social-economic forces and political systems. 3(3-0).
Prerequisite: GOV 205.

GOV 290 SPECIAL STUDIES IN GOVERNMENT

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1 to 3 (1 to 3-0).

HISTORY

The history curriculum provides you, by means of a systematic approach to historical data, an expanding reference to examination and appreciation of the cultural traditions of the past. The establishment of critical standards for the evaluation and comprehension of the contemporary world and its problems is one of the primary goals of history.

HIS 103 WESTERN CIVILIZATION I

Survey and analysis of major intellectual, social, political, and economic developments of western civilization from ancient times until the 18th Century. 3(3-0).
Prerequisite: None.

HIS 104 WESTERN CIVILIZATION II

Survey and analysis of major intellectual, social, political, and economic developments of western civilization from the 18th Century until the present. 3(3-0).
Prerequisite: None.

HIS 201 UNITED STATES–SURVEY I

Political, economic, and social development of the United States from colonial times to and including the Civil War and the Reconstruction Period. 3(3-0).
Prerequisite: None.

HIS 202 UNITED STATES–SURVEY II

Political, economic, and social development of the United States from 1877 to and including the current Civil Rights Movement. 3(3-0).
Prerequisite: None.

HIS 212 TWENTIETH CENTURY EUROPEAN

Major events from the First World War to the present with emphasis on industrialization, nationalism, social upheaval, totalitarianism, anticolonialism, and war. 3(3-0).
Prerequisite: None.

HIS 290 SPECIAL STUDIES IN HISTORY

Individual guidance in advanced studies. Admission by permission of the instructor 1 to 3 (1 to 3-0).

MATHEMATICS

The mathematics courses have been designed to broaden your concept of mathematics as a universal language of creative and critical thought. They also have been planned to meet your needs if you intend to teach in the public schools, to do advanced work in mathematics, or to pursue careers which will substantially rely upon mathematics.

MAT 03 BASIC GEOMETRY

Fundamental concepts of lines, angles, triangles, circles; basic geometric relations; general mensuration, geometric constructions; and other selected topics. 3(3-0), 48 Hrs.
Prerequisite: One year of high school algebra or MAT 11.

MAT 10 GENERAL MATHEMATICS

Arithmetic operations with whole numbers, common and decimal fractions, basic principles of measurement, percentage, averages, signed numbers, and other selected topics. 3(3-0), 48 Hrs.
Prerequisite: None.

MAT 11 BASIC ALGEBRA

Fundamental concepts of arithmetic and algebra; functions and graphs, special products and factoring; fractions, roots and exponents; systems of linear equations; introduction to statistics; other selected topics. 3(3-0), 48 Hrs.
Prerequisite: None.

MAT 15 GENERAL AVIATION MATHEMATICS

Fundamental operations with common and decimal fractions, mixed numbers, square root algorithm, area, volume, ratio, signed numbers, and other selected topics. 3(3-0), 48 Hrs.
Prerequisite: None.

MAT 20 ALGEBRA

Basic concepts of algebra: symbols, equations, ratio and proportion, exponents, radicals, formulas, concepts of right triangle, trigonometry and other selected topics. 3(3-0), 48 Hrs.
Prerequisite: MAT 10 or advanced placement examination in arithmetic.

MAT 100 FUNDAMENTALS OF MATHEMATICS I

Fundamental properties of arithmetic, algebra, and set notation including first and second degree equations and inequations. 3(3-0).
Prerequisite: One year of high school algebra.

*MAT 103 COLLEGE ALGEBRA

Sets, operations on sets, real number system and fundamental operations of algebra, conic sections, inequalities, linear and quadratic functions, systems of equations and their graphs; ratio, proportion and variation; mathematical induction, binomial theorem and other selected topics. 3(4-1), 80 Hrs.
Prerequisites: One year of high school algebra and geometry.

*MAT 104 TRIGONOMETRY

Exponential and logarithmic functions, circular functions, vectors, solution of right and oblique triangles, complex numbers, series and sequences, intuitive notion of limit, continuity, and other selected topics. 3(4-1), 80 Hrs.
Prerequisite: MAT 103.

*MAT 111 PRE-CALCULUS

Elements of coordinate geometry; functions and algebra of functions; polynomial and rational functions; exponential and logarithmic functions; trigonometric functions; functions to two variables. 4(5-0).
Prerequisite: Four units of high school mathematics.

MAT 112 CALCULUS I

Derivatives; continuity; slope, velocity, rates of change, curve sketching; chain rule; related rates; maximum-minimum theorems; differentials; integration and some applications of integration. 4(5-0).
Prerequisite: MAT 111 or MAT 104.

MAT 200 FUNDAMENTALS OF MATHEMATICS II

Fundamental properties of logic, probability, trigonometry and descriptive statistics. 3(3-0).
Prerequisite: MAT 100 or three units of high school mathematics.

**MAT 201 STATISTICAL ANALYSIS I

Basic concepts of probability and introduction to statistical inference. Applications of binomial distribution, normal distribution, linear regression and correlation. 3(3-0).
Prerequisite: Three units of high school mathematics.

†MAT 202 STATISTICAL ANALYSIS II

Presentation of statistical techniques and physical situations to which they apply. Student's T, Chi-Square, and F tests. Linear models for experimental situations; multiple regression and correlation. 3(3-0).
Prerequisite: MAT 201.

**MAT 203 ELEMENTARY STATISTICS

Descriptive statistics, frequency distributions, binomial and normal distributions, Central Limit Theorem, decision making tests, Chi-Square, regression and correlation. 3(3-0).
Prerequisite: Three units of high school mathematics or MAT 200.

†MAT 210 TOPICS IN MODERN GEOMETRY

Topics from synthetic geometry, affine and projective geometry, algebraic geometry, non-Euclidean geometry, hyperbolic plane geometry. Admission by permission of the instructor. 3(3-0).

MAT 211 CALCULUS II

Techniques of integration; limits; sequences and series; vectors; differentiation-partial derivatives, multi-variable differentiation; directional derivatives. 4(5-0).
Prerequisite: MAT 112.

MAT 212 CALCULUS III

Integration--work, force, volume, multiple and iterated integrals; linear algebra--systems of linear equations and determinants; vectors; inner products, cross products, matrices; differential equations--first order, variables separable; integrating factors; second order homogeneous and non-homogeneous, series solutions. 4(5-0).
Prerequisite: MAT 211.

MAT 220 MATRIX ALGEBRA

Matrices, determinants, inverse of a matrix, rank and equivalence, linear equations and linear dependence vector spaces, linear transformations, characteristic equation of a matrix; bilinear, quadratic, and Hermintian forms. Admission by permission of the instructor. 3-(3-0).

†MAT 221 INTRODUCTION TO MODERN ALGEBRA I

Integers, basic properties; axiomatic approach to algebra, groups, rings, domains, ideals, fields, and modules. Admission by permission of instructor. 3(3-0).

†MAT 222 INTRODUCTION TO MODERN ALGEBRA II

Linear equations, vector spaces, linear transformations, polynomials, determinants, invariant direct-sum decompositions, rational and Jordan forms, inner product spaces, bilinear forms. 3(3-0).
Prerequisite: MAT 221.

†MAT 230 PROBABILITY

Introduction to the mathematical theory of probability for the student in biological sciences, social sciences and business administration. Instruction in modern topics as part of early college mathematics. Use of mathematical models to interpret the physical phenomena and to predict the outcomes of related experiments. 3(3-0).
Prerequisite: MAT 103 or MAT 200.

MAT 290 SPECIAL STUDIES IN MATHEMATICS

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1 to 3 (1 to 3-0).

**Credit will be given for MAT 103 and 104, or for MAT 111, but not both.*

***Credit will be given for MAT 201 or MAT 203, but not both.*

†These courses are not taught on a regular basis, but are offered subject to adequate demand.

MUSIC

If you have musical talent, WACC will arrange for private lessons for your development of that talent and give you college credits for that study. Development of creativity should be one of the goals of your education at WACC.

MUS 201 APPLIED MUSIC IN AREAS OF PIANO, ORGAN, AND VOICE I

Private instruction in piano, organ, and voice, Weekly lessons. Concentration upon solid technical work and trouble shooting of specific problems. Sight reading and the exploration of new repertoire are stressed. Instruction is flexible to accommodate the requirements of the individual student at every level of accomplishment. By appointment. Special fee. 1 or 2(2-0).

MUS 202 APPLIED MUSIC IN AREAS OF PIANO, ORGAN, AND VOICE II

Continuation of MUS 201. By appointment. Special fee. 1 or 2(2-0).

MUS 204 MUSIC THEORY, SIGHT SINGING, AND COMPOSITION I

Private instruction in technical areas of music theory, sight singing, and composition. By appointment. Special fee. 1 or 2(2-0).

MUS 205 MUSIC THEORY, SIGHT SINGING, AND COMPOSITION II

Continuation of MUS 204. By appointment. Special fee. 1 or 2(2-0).
Note: Course work in music is not offered at present, but may be transferred from another college.

PHILOSOPHY

Philosophy is literally the "love of wisdom" and actually the science which investigates the systems man has devised for looking at reality and human nature and conduct. The aim of philosophy courses is to aid you in forming your personal philosophy and to help you to understand the thought and behavior of others, past and present.

PHL 101 INTRODUCTION TO PHILOSOPHICAL ANALYSIS

Investigation of major perennial problems in philosophy: Meaning and Truth, Perception and External world; God, Mind and Body. 3(3-0).
Prerequisite: None.

PHL 102 ETHICS AND POLITICAL PHILOSOPHY

Status of deontological language, free will and responsibility, major issues in contemporary political philosophy. 3(3-0).
Prerequisite: None.

PHL 201 SYMBOLIC LOGIC

Principles of valid deductive reasoning developed in formal manner, consistency and completeness, axiomatic structures. 3(3-0).
Prerequisites: PHL 101, and MAT 100.

PHYSICAL EDUCATION

One Physical Education course is required of both men and women each semester that the student is a full-time Liberal Arts degree candidate. (Applied Arts degree candidates will find the physical education requirements on the appropriate Applied Arts program pages.) The Physical Education requirements for PE 105 to 108 and PE 115 to 118 may be waived with permission of the Dean if a student has been in the Armed Services for at least one year of active duty or if the Dean determines that he should be excused because of age or physical condition.

COURSES FOR MEN

PE 105 PHYSICAL EDUCATION

Instruction and participation in some of the following physical activities; physical fitness, flag football, soccer, speedball, volleyball, and weight training. 1(0-2).

PE 106 PHYSICAL EDUCATION

Instruction and participation in some of the following physical activities; basketball, beginning swimming, elementary games, gymnastics, physical fitness, Red Cross Water Life Saving, Red Cross Water Safety Instructors, softball and wrestling. 1(0-2).

PE 107 PHYSICAL EDUCATION

Instruction and participation in some of the following physical activities; archery, bowling, flag football, golf, physical fitness, soccer and weight training. 1(0-2).

PE 108 PHYSICAL EDUCATION

Instruction and participation in some of the following physical activities; badminton, elementary games, golf, gymnastics, physical fitness, skiing, tennis, track and weight training. 1(0-2).

PE 109 PERSONAL AND COMMUNITY HEALTH

Up to date information concerning personal and community health problems of the college student of today. 2(2-0).

COURSES FOR WOMEN

PE 115 PHYSICAL EDUCATION

Instruction and participation in some of the following physical activities; badminton, field hockey, volleyball. 1(0-2).

PE 116 PHYSICAL EDUCATION

Instruction and participation in some of the following physical activities; basketball, beginning swimming, elementary games, gymnastics, modern dance, physical fitness, Red Cross Water Life Saving, Red Cross Water Safety Instructors, Synchronized swimming and softball. 1(0-2).

PE 117 PHYSICAL EDUCATION

Instruction and participation in some of the following physical activities; archery, bowling, field hockey, golf, physical fitness. 1(0-2).

PE 118 PHYSICAL EDUCATION

Instruction and participation in some of the following physical activities; badminton, elementary games, golf, gymnastics, physical fitness, skiing and tennis. 1(0-2).

PE 109 PERSONAL AND COMMUNITY HEALTH

Up to date information concerning personal and community health problems of the college student of today. 2(2-0).

PHYSICS

Physics is the science of inanimate matter and motion. The study of physics will increase your understanding of the basic laws of nature as they relate to our physical environment and will create in you an appreciation of the possible extent of our knowledge of the physical world. Through your laboratory work you will become acquainted with experimental techniques and tools, and you will gain experience in interpreting and communicating experimental results.

PHY 20 PHYSICS SURVEY

This course will cover most of the following topics, selected somewhat to meet the needs of the majority of the students in any particular section: Matter and measurement; behavior of solids, liquids, and gases; mechanics, including forces, motion, energy, power, and machines; heat; sound; light; optics; magnetism; electricity; atomic phenonema. 3(3-0), 48 Hrs.
Prerequisite: MAT 20.

PHY 21 PHYSICS—MECHANICS

Lecture, demonstrations, problem-solving course in elementary mechanics: basic concepts of scientific method; the metric system; vectors, translatory motion; rotary motion, work, power, energy; physical properties of liquids, solids, gasses. 4(3-3), 96 Hrs.
Prerequisites: MAT 104 or equivalent and one year high school science.

PHY 22 INTRODUCTION TO METALLURGY

Introduction to science of physical metallurgy; chemical composition, crystallization, effects of mechanical treatment: drawing, rolling, shaping; thermal or heat treatment. 4(4-0), 64 Hrs.
Prerequisite: PHY 21.

PHY 31 PHYSICS—ELECTRICITY AND MAGNETISM

Fundamental concepts of electrostatics, electrolysis; AC and CD circuits, magnetism; electromagnetic induction; basic principles of electricity. 4(4-0), 64 Hrs.
Prerequisite: PHY 21.

PHY 33 PHYSICS—HEAT AND LIGHT

Basic principles of heat and its measurements: Thermometry, calorimetry, expansion of liquids, solids, and gases, transfer of heat; study of light including refraction, illumination, optics and color. 4(3-3), 96 Hrs.
Prerequisite: PHY 21.

PHY 101 INTRODUCTORY PHYSICS I

A one semester course designed to improve the backgrounds of students who never completed or did poorly in high school physics. Topics included are mechanics, heat, wave motion, electricity, magnetism and an introduction to atomic and nuclear physics. 4(3-3).
Prerequisite: A working knowledge of high school algebra.

PHY 102 INTRODUCTORY PHYSICS II

A continuation of PHY 101 where each of the topics discussed in PHY 101 will be discussed in more detail. 4(3-3).
Prerequisite: PHY 101.

PHY 103 RADIATION PHYSICS

The fundamentals of electrical and radiation physics and the principles underlying the operation of X-ray equipment and auxiliary devices. 4(3-3).
Prerequisite: PHY 101.

PHY 105 GENERAL PHYSICS I

Principles of mechanics and heat. Calculus will be used whenever this method leads to a more direct solution. 4(3-3).
Prerequisite: High school physics.
Corequisite: MAT 112.

PHY 106 GENERAL PHYSICS II

Continuation of PHY 105. Principles of electricity, magnetism, wave motion, optics and sound. 4(3-3).
Prerequisite: PHY 105.
Corequisite: MAT 211.

PHY 210 MECHANICS

Intermediate course in kinematics and dynamics. Differential and integral calculus are used extensively in derivations and problems. 4(3-3).
Prerequisite: PHY 106.
Corequisite: MAT 212.

PHY 220 MODERN PHYSICS

Atomic and nuclear physics including structures of atom and nucleus, radioactivity; fission and fusion; relativity; and the periodic table of elements. 4(3-3).
Prerequisite: PHY 106.
Corequisite: MAT 212.

PRE-ENGINEERING

Most of the following courses are basic to all types of engineering and are required at The Williamsport Area Community College for all engineering students. However, courses EGR 160, 230 and 240 are for civil, mechanical, and electrical engineering, in that order; you may elect one of these during your fourth semester.

EGR 160 SURVEYING

Theory of plane and topographic surveying, horizontal and vertical curves, and earthwork as related to civil engineering projects. 3(2-3).
Prerequisite: One semester in Engineering Drawing.

EGR 200 STATICS

Vectoral mechanics, force systems, friction, centroids and moments of inertia. 3(3-0).
Prerequisite: PHY 105.
Corequisite: MAT 211.

EGR 201 GRAPHICS

Spatial relationships of points, lines, planes and solids, with engineering applications; vectors; graphical mathematics; introduction to nomography. 3(2-3).
Prerequisite: None.

EGR 210 DYNAMICS

Motion of a particle, relative motion, kinetics of translation, rotation and plane motion. 3(3-0).
Prerequisite: EGR 200.

EGR 220 STRENGTH OF MATERIALS

Axial stress and strain torsion, stresses in beams, elastic curves and deflections of beams, combined stress, columns. 3(3-0).
Corequisite: MAT 212.

EGR 230 THERMODYNAMICS

Basic thermodynamics concepts and definitions, first and second law of thermodynamics, properties of pure substances. 3(3-0).
Prerequisites: MAT 212, CHE 104, and PHY 106.

EGR 240 ELECTRICAL CIRCUITS

Basic electrical quantities, resistance, inductance and capacitance, including their responses to constant, sinusoidal and general driving functions, elementary network analysis. 3(3-0).
Prerequisites: PHY 106 and MAT 212.

PSYCHOLOGY

Psychology is the study of human behavior with emphasis on better understanding and prediction of human behavior. Discussion will concentrate on personality factors, theories of learning, motivation, emotion, thinking, intelligence, maturation, perception, and the application of psychological findings and methods in areas such as business and industry, medicine, mental hygiene, law, salesmanship, teaching, and vocational planning.

PSY 101 GENERAL PSYCHOLOGY

Introduction to the science of human behavior. 3(3-0).
Prerequisite: None.

PSY 202 EDUCATIONAL PSYCHOLOGY

Psychological principles and concepts applied to learning. Individual differences, motivation and emotion. 3(3-0).
Prerequisite: PSY 101 or permission of the instructor.

PSY 205 ABNORMAL PSYCHOLOGY

Principal forms of mental and emotional disorders with emphasis upon their causes, symptoms, and course of treatment. Goal to study normal behavior by examining such behavior in distortion or in exaggeration. 3(3-0).
Prerequisite: Permission of the instructor.

PSY 210 SOCIAL PSYCHOLOGY

Interaction of individuals in their several group relations, the contacts of harmony, and conflict within groups as well as between groups, group leadership and group controls, phenomena of imitation and suggestion. 3(3-0).
Prerequisite: Permission of the instructor.

PSY 215 DEVELOPMENTAL PSYCHOLOGY

Psychological development and change throughout the life span, with emphasis on basic principles of child and adolescent development, genetic and environmental influences on the course of physical, motor, intellectual, emotional, social, and personality development. 3(3-0).
Prerequisite: PSY 101.

PSY 290 SPECIAL STUDIES IN PSYCHOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1 to 3(1 to 3-0).

SOCIOLOGY

Sociology is the systematic study of human inter-relationships and of the products of these relationships. It seeks to understand the operation of human societies. A background in sociology is considered to be a valuable preparation for many professional and vocational activities, including business, law, the ministry, education, and social work.

SOC 101 INTRODUCTION TO SOCIOLOGY

Introduction to methods used by sociologists in studying how people live together. Dynamic relationships among society, culture and personality serve as focus for the course materials. 3(3-0).
Prerequisite: None.

SOC 102 GENERAL ANTHROPOLOGY

A survey of the physical and cultural evolution of man and society. Emphasis is placed upon the relationship of man's physical structure to behavior and also upon comparative descriptions of recent primitive societies. 3(3-0).
Prerequisite: None.

SOC 201 MARRIAGE AND THE FAMILY

The history, structure, and functions of modern American family life, emphasizing dating, courtship, factors in marital adjustment, and the changing status of family members. 3(3-0).
Prerequisite: SOC 101.

SOC 203 INTRODUCTION TO SOCIAL WORK

Basic concepts on social welfare programs, social case work, and field work. Especially designed for students planning a career in social work. 3(3-0).
Prerequisite: SOC 101.

SOC 205 URBAN SOCIOLOGY

The concept of community is treated as it operates and affects individual and group behavior in rural, suburban, and urban settings. Emphasis is placed upon characteristic institutions and problems of modern city life. 3(3-0).
Prerequisite: SOC 101.

SOC 207 CRIMINOLOGY

The nature, genesis, and organization of criminal behavior is examined from both group and individual viewpoints. Juvenile delinquency and the treatment of crime are presented. 3(3-0).
Prerequisite: SOC 101.

SOC 290 SPECIAL STUDIES IN SOCIOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. 1 to 3 (1 to 3-0).

SPANISH

Courses in Spanish aim to develop the skills essential to understanding, reading and speaking the language and to provide you with the knowledge necessary to enroll in higher level courses in the college or university to which you will transfer.

SPA 101 BEGINNING SPANISH I

Basic grammar and language structure. Comprehension, speaking and reading with particular regard to pronunciation and accent. 4(4-0).
Prerequisite: None.

SPA 102 BEGINNING SPANISH II

Continuation of SPA 101. 4(4-0).
Prerequisite: SPA 101.

SPA 201 INTERMEDIATE SPANISH I

Review of grammar, with exercises in the Spanish subjunctive. Readings on intermediate level. Increased command of the language. 3(3-0).
Prerequisite: SPA 102.

SPA 202 INTERMEDIATE SPANISH II

Continuation of SPA 201. 3(3-0).
Prerequisite: SPA 201.

SPA 211 ADVANCED SPANISH COMPOSITION AND CONVERSATION I

Particular emphasis on writing Spanish. Short selections of Spanish literature as a basis for compositions and conversations. 3(3-0).
Prerequisite: SPA 202.

SPA 212 ADVANCED SPANISH COMPOSITION AND CONVERSATION II

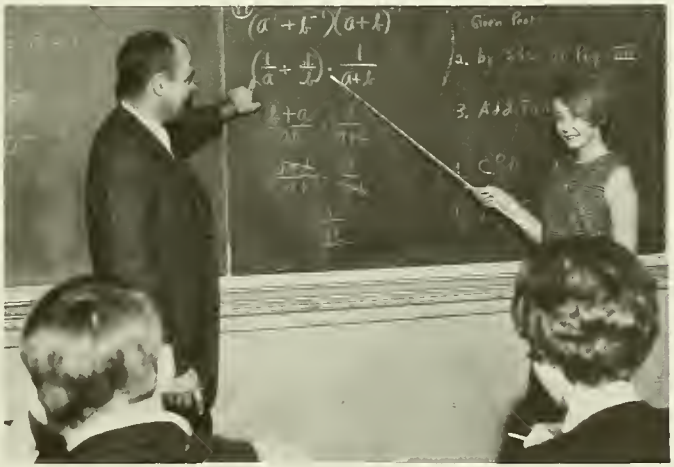
Continuation of SPA 211. 3(3-0).
Prerequisite: SPA 211.

DEVELOPMENTAL PROGRAM

Non-Credit

For the student whose previous academic achievement and experience does not qualify him for direct admission to an Applied Arts and Sciences career program or a Liberal Arts and Sciences curriculum, The Williamsport Area Community College offers development courses in English, Mathematics, and Reading and Study Skills. Upon recommendation of the appropriate Dean, these developmental courses will also be available as electives to regular students in other programs or curricula.

Two levels of work are recognized within the program. The developmental level serves to correct deficiencies needed to participate in a specific Liberal Arts and Sciences curriculum or Applied Arts and Sciences program. The "motivational" courses will be selected from the college program or curriculum of a student's strength and interest. An individual student's schedule will be tailored to the needs of the student from both areas (i.e., developmental and motivational).



The developmental courses in the Developmental Program carry credit equivalents or hours, but these credit equivalents may not be applied toward an associate degree unless the courses are required, or as an elective in the student's Applied Arts and Sciences program or Liberal Arts and Sciences curriculum. When the student is to be admitted as a degree candidate, his work will be evaluated by the appropriate Dean. Course credit, where applicable, will be given for those courses in his program or curriculum for which the student has received a grade of "C" or better. The student's grade point average (GPA) will be determined by the courses taken after he begins work as a degree student.

COURSES AVAILABLE

Basic English
Basic Algebra
Reading and Study Skills

PROGRAM REQUIREMENTS

Students completing the Developmental Program and transferring to a regular program or curriculum of the College are given the same priority as other students who transfer programs.

Students must have a 2.00 GPA in each developmental course in order to be considered for admission to a regular program or curriculum.

Developmental students may carry no more than 12 credit hour equivalents during the regular academic year or no more than 6 credit hour equivalents during the summer session.

TERMINATION OR TRANSFER

Upon recommendation of the Department of Counseling and Testing the student may be accepted by the Director of Admissions for admission to any one of the programs or curricula of the College for which he may be qualified providing that such acceptance is approved by the appropriate Dean. The student may be terminated from the College on the basis of unsatisfacotry progress in the Developmental Program and on the recommendation of Counseling and approval by the Director of the Developmental Program.

Many Employers *come to WACC to offer our graduates jobs with excellent starting salaries, liberal insurance benefits, company financed educational programs, and unlimited advancement opportunities.*

ERRATA

For those Applied Arts and Science Programs in which mathematics courses MAT 103 (College Algebra) and MAT 104 (Trigonometry) appear, the student is required to have had at least one year of high school Algebra and Geometry.

Students wishing to enroll in programs which carry this prerequisite and who have not had high school Algebra and Geometry are urged to contact the Dean of Applied Arts and Sciences with reference to correcting this deficiency.

SCHOOL OF APPLIED ARTS AND SCIENCES

Career Programs

PROGRAMS FOR YOU IF YOU PLAN –

To enroll in a one or two-year semi-professional or technical career program which will prepare you for immediate entry into business or industry, or for transfer to appropriate baccalaureate programs.

The School of Applied Arts and Sciences of The Williamsport Area Community College was developed from the internationally famous Williamsport Technical Institute which had its origin in 1919. From its beginning to its community college status, it has shown an adaptability to changing demands for trained manpower. The development of the present community college has been a direct result of this foresight and flexibility.

Recent government statistics indicate that 70% of today's 23 year-olds have had no job training and have not completed a college education. Paradoxically, nearly 80% of all jobs available in the United States require some vocational or technical skills.

The School of Applied Arts and Sciences of the College offers 45 career programs to meet the current manpower shortage in semi-professional and technical categories. It constantly studies the future as well as the present needs of business, the total society of the area, and the wider world in which its students will work and live. Then it modifies its programs to meet needs and opportunities.

1:30 p.m.
CAREER PROGRAMS

AN INTERVIEW WITH DEAN BRESSLER is must reading for

High School Students • Parents • High School Teachers • High School Counselors
Junior High School Counselors • All Interested Applicants • Employers

JAMES P. BRESSLER, Dean of the School of Applied Arts and Sciences

The following interview with an applicant for the Drafting Program will answer many of your questions about the 46 Career Programs in the Applied Arts and Sciences.

Applicant: If I want to become a draftsman, how long do I have to go to the Community College?

Dean Bressler: Two years.

Applicant: I understand that you have both Degree Programs and Certificate Programs. What's the difference?

Dean Bressler: There is no time difference. With the exception of a few of the Certificate programs, they both take two years. The Associate Degree Program is stiffer. For most Associate Degree Programs you have to have had two years of high school mathematics and one year of science to qualify; and then, to continue in the program, you must take more academic subjects. This pays off in the long run because employers are willing to pay higher salaries for skilled technicians if they also have a good general education.

Applicant: How would I know whether to take the Associate Degree Program in Engineering Drafting Technology or the Certificate Program in Mechanical Drafting?

Dean Bressler: We will review your high school background and your results from the ACT tests. These findings will enable us to tell you whether you will have a better chance of success in the Certificate or the Associate Degree Programs.

Applicant: Now, let me get it straight. If I take the Certificate Program in Mechanical Drafting, are you saying that there are fewer admission requirements, and that I will spend most of my time learning drafting skills and a minimum of time on academic subjects?

Dean Bressler: That's about the size of it. But, let me explain the difference. While admission to the Associate Degree Program is based upon required high school subjects and the ACT test, admission to a Certificate Program is determined more on general aptitude and ability for an occupational area as shown by the CPP test, rather than by your high school background. We look at your ability and desire to learn a skill more than we do at your ability to do high-level academic work. However, in the Certificate Programs you'll have to take some work in basic English, mathematics and economics.

Applicant: I have a friend who is not sure of what career to prepare for. Can you help him?

Dean Bressler: Yes, we have a Vocational Diagnostic Program, a program designed to assist students in career selection through testing, counseling, and actual job trial experiences.

Applicant: How does it work?

Dean Bressler: Let me explain. It provides extensive vocational information through a series of tours, movies, and lectures, and provides working experience through actual job trials in different vocational areas that seem most relevant to his abilities and interests. This, we feel, provides the information necessary to make the right vocational choice.

Applicant: How much time does the program take?

Dean Bressler: Exactly three weeks, and during that time he will be given information about many different career fields including their educational and training requirements, employment opportunities, physical demands, and the wages he can expect. He would also be in contact daily with a counselor who will assist him in his final career selection.

Applicant: I like that - especially the personal touch.

Dean Bressler: Actually, the purpose of all our Career Programs at WACC is to assist students to achieve their goals. If you check the College catalog, you will find 46 career programs to meet a broad range of abilities and interests.

Applicant: How much will the Vocational Diagnostic Program cost him?

Dean Bressler: The tuition is $90.00. But, if he is a resident of a sponsoring district, he will have to pay only $30.00 or one-third of the amount.

Applicant: The program seems to be tailored for him. Now, I've just one more question. Would it be possible for me to visit the College, inspect the Drafting Department, and talk to the instructors?

Dean Bressler: Yes indeed. You can call the Chairman of the Drafting Department anytime and tell him what day you want to visit. He'll be happy to answer all your questions. I hope you will decide to come to WACC. If you do, I'm sure, in years to come, you'll agree that it was the best investment of time and effort you ever made. But, better yet, forget about calling the Drafting Department. I'll walk down there with you and help you set up an appointment. That way you can see the department and some of the students at work. I think you'll like what you see.

RETURN BOOKS HERE

CAREERS FOR WOMEN

We invite . . .

Recent high school graduates

Housewives interested in "second careers"

You to consider 46 EXCITING CAREER OPPORTUNITIES

We thought you'd like to know that . . .

An estimated 50% of all jobs will be held by women in the next ten years.

Today, a woman can work in nearly any field she desires, if she has the ability, knowledge, and skill.

Women graduates have found successful careers in many of the Career Programs WACC offers.

WACC is constantly adding new Career Programs for women to fill critical needs in business, industry, and the health-service field.

The present ratio of men to women students at WACC is five to one . . . but . . . it's changing with the times!

CAREER PROGRAMS

The School of Applied Arts and Sciences works closely with management representatives from business and industry as well as labor groups to develop new programs which will provide students with needed skills and area industry with trained manpower. Pictured are industry representatives who met with Dr. Carl to help develop the Forest Technology Program. Left to right are Nelson Folsom, Wood Procurement Manager, Charmin Paper Products Company (a subsidiary of Proctor and Gamble), and Edward Swisher, Wood Procurement Manager, Hammermill Paper Company, Lock Haven.

Associate Degree Career Programs

The School of Applied Arts and Sciences offers twenty-six Associate in Applied Science Degree Programs which have been designed to prepare you for a semi-professional or technical career in business, industry, or the health-service field. These two-year Associate Degree Career Programs include technical specialty courses, allied subject matter, and special general education courses.

Associate Degree courses are not generally designed for transfer to four-year colleges or universities. However, some colleges will accept our Associate Degree credits for transfer to their four-year programs leading to a baccalaureate degree. More and more colleges are offering this college-transfer opportunity to our Associate Degree graduates.

Certificate Career Programs

The School of Applied Arts and Sciences offers twenty Certificate in Applied Science Programs designed to prepare you for entry employment in business, industry, or the health-service field. These one-and two-year Certificate Career Programs provide intensive skills training in specific occupations and emphasize functional shop-laboratory work. Related technical and special general education instruction is offered in separate supporting courses or is integrated into the occupational content of these programs.

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Career Programs

COURSE IDENTIFICATIONS

Associate Degree and Certificate Career Programs and course descriptions in the School of Applied Arts and Sciences are alphabetically organized within department units.

Career Programs in the School of Applied Arts and Sciences are preceded by two identification letters.
Example: AU AUTOMOTIVE TECHNOLOGY (Program)

Course descriptions within the programs in the School of Applied Arts and Sciences are preceded by two or three identification letters and two digits. Examples: AU 37 Braking Systems (Course)
MAT 03 Basic Geometry (Course)

Course descriptions in the School of Liberal Arts and Sciences are preceded by subject identification and three digits. These courses are designed to be college transferable.
Example: GOV 201 - American Government-National

NUMBERING SYSTEM

Normally, Applied Arts and Sciences courses numbered 01-19 are taken in your first semester; 20-29 in your second semester; 30-39 in your third semester; and 40-49 in your fourth semester. Following each course description, the first number shows the number of credits (abbreviated Cr. - Associate Degree Programs only) or Units (abbreviated Ut. - Certificate Programs only) assigned to the course. The first number in the parentheses indicates the hours of lecture per week and the second number indicates the hours of laboratory or shop per week. The number following the parenthesis indicates the total hours per semester assigned the course (this number is shown only for Certificate courses or for Associate Degree courses that are incorporated into Certificate Programs. Where Associate Degree courses are incorporated into Certificate Programs, credits are recorded as Units.

Example: Associate Degree
BS 15 Typewriting I 3 Cr. (2-3)
Certificate
BS 15 Typewriting I 3 Ut. (2-3), 80 Hrs.

ELECTIVES

All course electives in both Associate Degree and Certificate Programs must be recommended by the student's advisor and the department chairman and be approved by the Dean.

COURSE SUBSTITUTIONS AND ELECTIVES FROM THE SCHOOL OF LIBERAL ARTS AND SCIENCES

A student in Applied Arts and Sciences may take college transfer courses in the School of Liberal Arts and Sciences for his curriculum degree requirements on the recommendation of his department chairman and with the approval of the Deans of both Schools, when such action is determined to be in his interest and is consistent with his career goals.

Electives (General Studies) Applied Arts:
ENG 201 - History of English Literature I; ENG 202 - History of English Literature II; ENG 211 - Fundamentals of Speech; GOV 201 - American Government-National; GOV 202 - State and Local Government; HIS 201 - United States-Survey I; PSY 101 - General Psychology; SPA 101 - Beginning Spanish I; SPA 102 - Beginning Spanish II; SOC 101 - Introduction to Sociology; ESC 10 - Environmental Science.

AUTOMOTIVE DEPARTMENT / Career Programs

CHARLES E. WILKINSON, Chairman

Associate Degree

AU Automotive Technology
DT Diesel Technology

Certificate

AB Auto Body Repairman
AM Automotive Mechanics
DM Diesel Mechanics

AUTOMOTIVE TECHNOLOGY (AU)

Associate Degree / Two Years

This program will give you an understanding of basic and advanced practice in automotive theory. You will also become knowledgeable in the use of modern industrial tools and equipment while working on major and minor components of individual units and theory applications. Theory applications, manipulative skills and semi-professional demands are course specifics. You will be prepared to solve automotive mechanical problems.

Types of Jobs: Highly skilled jobs in the automobile manufacturing industry, including testing and experimental departments, developmental laboratories; assembly and component remanufacturing, other rebuilding shops; and vehicle diagnostic centers.

Job Opportunities: Excellent with good starting salaries and unlimited advancements including the possibility of company-financed training leading to an engineering degree.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AU	15	Power Plants I	2	2	2	64
AU	16	Power Train I	2	2	2	64
AU	18	Hydraulic Systems, Vehicular I	1	1	2	48
AU	19	Electrical Systems I	3	2	3	80
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			15	14	13	432

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AU	20	Power Plants II	2	1	3	64
AU	27	Power Train II	1	1	2	48
AU	28	Electrical Systems II	2	2	2	64
AU	29	Hydraulic Systems, Vehicular II	1	1	2	48
ECO	11	Basic Economics	3	3	0	48
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
*PE		Physical Education	1	0	2	32
			16	15	15	448

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AU	30	Fuel Systems I	3	2	3	80
AU	31	Braking Systems	3	2	3	80
AU	32	Suspensions	1	1	2	48
AU	33	Body and Chassis	1	1	0	16
BM	13	Principles of Business	3	3	0	48
CS	03	Introduction to Data Processing	3	3	0	48
PHY	21	Physics-Mechanics	4	3	3	96
			18	15	11	416

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AU	42	Fuel Systems II	1	1	2	48
AU	43	Diagnosis	2	1	4	80
AU	45	Climate Control	1	1	2	48
AU	47	Trouble Shooting and Tune-up	2	1	4	80
AU	49	Vehicle Maintenance	2	1	3	64
BM	33	Business Organization and Management	3	3	0	48
ENG	211	Fundamentals of Speech	3	3	0	48
**Elective (General Studies)			3-4	3-4	0	48-64
			17-18	14-15	15	464-480

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Elective (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: Algebra and geometry; one year of science.

DIESEL TECHNOLOGY (DT)

Associate Degree / Two Years

The Diesel Technology Program will provide you with the theory and technical specifics of diesel-powered vehicles. You will also gain an understanding of modern testing and servicing equipment.

Types of Jobs: Technician in manufacturing or remanufacturing; foreman or manager of rebuilding shop or fuel injection shop; field service; customer relations man.

Job Opportunities: Very good with excellent starting salaries and possibilities for job advancements and company-financed further education.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AU	15	Power Plants I	2	2	2	64
AU	16	Power Train I	2	2	2	64
AU	18	Hydraulic Systems, Vehicular I	1	1	2	48
AU	19	Electrical Systems I	3	2	3	80
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			15	14	13	432

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AU	20	Power Plants II	2	1	3	64
AU	27	Power Train II	1	1	2	48
AU	28	Electrical Systems II	2	2	2	64
AU	29	Hydraulic Systems, Vehicular II	1	1	2	48
ECO	11	Basic Economics	3	3	0	48
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
*PE		Physical Education	1	0	2	32
			16	15	13	448

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM	13	Principles of Business	3	3	0	48
CS	03	Introduction to Data Processing	3	3	0	48
DT	31	Fuel Systems I	3	2	3	80
DT	32	Brakes and Retarders	3	2	3	80
DT	37	Cab, Body and Chassis	1	1	0	16
DT	38	Suspension	1	1	2	48
PHY	21	Physics-Mechanics	4	3	3	96
			18	15	11	416

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AU	45	Climate Control	1	1	2	48
BM	33	Business Organization and Management	3	3	0	48
DT	43	Trouble Shooting and Tune-up	2	1	4	80
DT	44	Fuel Systems II	1	1	2	48
DT	45	Diagnosis	2	1	4	80
DT	49	Vehicle Maintenance	2	2	2	64
ENG	211	Fundamentals of Speech	3	3	0	48
**Elective (General Studies)			3-4	3-4	0	48-64
			17-18	15-16	14	464-480

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Elective (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: Algebra and geometry; one year of science.

AUTO BODY REPAIRMAN (AB)

Certificate / Two Years

In the Auto Body Repairman Program you will master trade tools and equipment through theory and practice in sheet metal repairs, sanding, and application of fillers, prime and color coatings. Shrinking, stretching, welding, panel installation, interior trim, and glass replacement are also stressed. You will become skilled in frame and steering alignment as well as damage estimation and repair.

Types of Jobs: Shop assignments in any of the skills mentioned above.

Job Opportunities: Unlimited demand with good pay advancements. Work areas include self-employment, auto body shops, and insurance companies.

FIRST SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AB 11	Auto Body Repair I	6	3	9	192
AB 12	Auto Body Repair II	6	3	9	192
ENG 03	Communications I	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		18	12	19	496

SECOND SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AB 21	Auto Body Repair III	6	3	9	192
AB 22	Auto Body Repair IV	6	3	9	192
ENG 04	Communications II	3	3	1	64
MAT 20	Algebra	3	3	0	48
		18	12	19	496

THIRD SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AB 31	Auto Body Repair V	6	3	10.5	216
AB 32	Auto Body Repair VI	6	3	10.5	216
ECO 02	Fundamentals of Economics	3	3	0	48
		15	9	21	480

FOURTH SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AB 41	Auto Body Repair VII	6	3	10.5	216
AB 42	Auto Body Repair VIII	6	3	10.5	216
BM 47	Small Business Management	3	3	0	48
		15	9	21	480

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

AUTOMOTIVE MECHANICS (AM)

Certificate / Two Years

Elementary theory and manipulative skills, as practiced with modern tools and equipment, are stressed in this program in which you will learn to service and repair passenger and light commercial vehicles. You will gain proficiency in working with power train, steering, brakes, body, ignition, carburetion, and electrical components and assemblies.

Types of Jobs: General auto mechanic in a dealership, independent garage, fleet operation, service station, etc.

Job Opportunities: Unlimited with opportunities for specialization and excellent hourly pay scales.

FIRST SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AM 11	Automotive Mechanics I	6	3	9	192
AM 12	Automotive Mechanics II	6	3	9	192
ENG 03	Communications I	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		18	12	19	496

SECOND SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AM 21	Automotive Mechanics III	6	3	9	192
AM 22	Automotive Mechanics IV	6	3	9	192
ENG 04	Communications II	3	3	1	64
MAT 20	Algebra	3	3	0	48
		18	12	19	496

THIRD SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AM 31	Automotive Mechanics V	6	3	10.5	216
AM 32	Automotive Mechanics VI	6	3	10.5	216
ECO 02	Fundamentals of Economics	3	3	0	48
		15	9	21	480

FOURTH SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AM 41	Automotive Mechanics VII	6	3	10.5	216
AM 42	Automotive Mechanics VIII	6	3	10.5	216
BM 47	Small Business Management	3	3	0	48
		15	9	21	480

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

DIESEL MECHANICS (DM)

Certificate / Two Years

Here is your program if you like to work with large vehicles on land and water. Using modern trade tools and equipment in the care and repair of diesel-powered vehicles, you will study trade theories and develop manipulative skills in this field. Some specialization is available in the following areas: fuel injection service, engine repair and rebuilding, power train (except engine), brakes, steering, and chassis work.

Types of Jobs: Mechanic in any of these fields: truck dealership; independent garage; truck fleet; contractor fleet; farm or construction equipment dealerships; mining, quarrying, and waterways fleets. Also, field service representative or self employment.

Job Opportunities: Unlimited with good starting rates and rapid increases and advancements.

FIRST SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AM 11	Automotive Mechanics I	6	3	9	192
AM 12	Automotive Mechanics II	6	3	9	192
ENG 03	Communications I	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		18	12	19	496

SECOND SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
DM 21	Diesel Mechanics I	6	3	9	192
DM 22	Diesel Mechanics II	6	3	9	192
ENG 04	Communications II	3	3	1	64
MAT 20	Algebra	3	3	0	48
		18	12	19	496

THIRD SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
DM 31	Diesel Mechanics III	6	3	10.5	216
DM 32	Diesel Mechanics IV	6	3	10.5	216
ECO 02	Fundamentals of Economics	3	3	0	48
		15	9	21	480

FOURTH SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
DM 41	Diesel Mechanics V	6	3	10.5	216
DM 42	Diesel Mechanics VI	6	3	10.5	216
BM 47	Small Business Management	3	3	0	48
		15	9	21	480

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *automotive department*

AB 11 AUTO BODY REPAIR I

Basic theory and practice in trade fundamentals; body and chassis work; sanding; masking. 6 Ut. (3-9), 192 Hrs.

AB 12 AUTO BODY REPAIR II

Metal work; gas and electric welding; stretching and shrinkage of metal; fasteners; riveting. 6 Ut. (3-9), 192 Hrs.

AB 21 AUTO BODY REPAIR III

Used car recoditioning; interior trim work. 6 Ut. (3-9), 192 Hrs.

AB 22 AUTO BODY REPAIR IV

Panel installation and alignment; front and rear suspension and alignment; frame alignment. 6 Ut. (3-9), 192 Hrs.

AB 31 AUTO BODY REPAIR V

Metal working and filling; color requirements. 6 Ut. (3-10.5), 216 Hrs.

AB 32 AUTO BODY REPAIR VI

Color matching; spray painting; working "totals". 6 Ut. (3-10.5), 216 Hrs.

AB 41 AUTO BODY REPAIR VII

Electrical practice; special trade tools and equipment; damage estimate; customizing. 6 Ut. (3-10.5), 216 Hrs.

AB 42 AUTO BODY REPAIR VIII

Customizing; stripping; vinyl tops; "felting"; custom painting; estimating. 6 Ut. (3-10.5), 216 Hrs.

AM 11 AUTOMOTIVE MECHANICS I

Basic theory of automotive vehicle design and utilization; chassis and body components design and utilization; nomenclature and relationships of parts, assemblies, and components. 6 Ut. (3-9), 192 Hrs.

AM 12 AUTOMOTIVE MECHANICS II

Engines, transmissions, brakes, steering, and other major components. 6 Ut. (3-9), 192 Hrs.

AM 21 AUTOMOTIVE MECHANICS III

Advance study of components as a whole and in breakdowns; clutches; transmissions; differentials; axles; bearings. 6 Ut. (3-9), 192 Hrs.

AM 22 AUTOMOTIVE MECHANICS IV

Chassis units; shocks; exhaust system; power seats and windows, convertible tops; service and repair of major drive train components. 6 Ut. (3-9), 192 Hrs.

AM 31 AUTOMOTIVE MECHANICS V

Continuing AM 21/22; brake systems; suspension; steering; alignment; wheel balance. 6 Ut. (3-10.5), 216 Hrs.

AM 32 AUTOMOTIVE MECHANICS VI

Theory and practice in gas and arc welding; continuation of lab exercises. 6 Ut. (3-10.5), 216 Hrs.

AM 41 AUTOMOTIVE MECHANICS VII

Heating and cooling; ventilation; tune-up; diagnosis; testing; 6 Ut. (3-10.5), 216 Hrs.

AM 42 AUTOMOTIVE MECHANICS VIII

Diagnosis; tune-up; ventilation; testing devices. 6 Ut. (3-10.5), 216 Hrs.

AU 15 POWER PLANTS I

Common and special trade tools; nomenclature of engine parts; service of components parts; disassembly and reassembly procedures. 2 Cr. (2-2).

AU 16 POWER TRAIN I

To learn various means of transferring power to drive mechanism; clutches, gear and for hydraulic transmissions; universal joints; propeller shafts; final drives; axles; bearings; front and/or rear drives; standard and locking differentials. 2 Cr. (2-2).

AU 18 HYDRAULIC SYSTEMS VEHICULAR I

Basic theory; applications to various vehicles; pressures; hoses and tubing; gauges; fittings; brakes, steering, transmissions, torque converters, retarders. 1 Cr. (1-2).

AU 19 ELECTRICAL SYSTEMS I

Theory; trouble shooting, servicing and testing of the various electrical units on motor vehicles. 3 Cr. (2-3).

AU 20 POWER PLANTS II

Detailed theory and lab work on engines; in such areas as head, value train, block, pistons and connecting rods; crankshaft and bearings, fuel and ignition systems; emission control; cooling; engine accessories. 2 Cr. (1-3).

AU 27 POWER TRAIN II

Theory and lab on gearing; transmissions, auxiliary transmissions; multi-speed differentials; power take-off units; reduction units; bogies; heavy duty drives. 1 Cr. (1-2).

AU 28 ELECTRICAL SYSTEMS II

Use of various test instruments in detail in electrical diagnosis and repair; study of electro-mechanical devices used on vehicles; vehicle instruments and accessories. 2 Cr. (2-2).

AU 29 HYDRAULIC SYSTEMS, VEHICULAR II

Theory and lab on heavy duty torque converters and transmissions; retarders; applications of hydraulic mechanism to trucks and heavy equipment. 1 Cr. (1-2).

AU 30 FUEL SYSTEMS I

Study and lab in various engine applications fuels; carburetion; injection, and diagnose, repair, adjust, re-test. 3 Cr. (2-3).

AU 31 BRAKING SYSTEMS

Theory and lab practice on various braking systems in common use; service brakes; parking brakes; power assisted; air-actuated; electric; retarders where applicable. 3 Cr. (2-3).

AU 32 SUSPENSIONS

Theory study of various types - passenger and commercial; front and rear; front-drive and rear-drive; tandom; weight distribution factors; steering; steering geometry; lab work. 1 Cr. (1-2).

AU 33 BODY AND CHASSIS

Study of various standard types of passenger shells; frame, stub-frame, and frameless chassis; truck and special vehicle cabs and frames; springs, pnuematic bags, shock absorbers; towing hitches; fifth-wheel mountings; commercial vehicle bodies; semi-trailers; minor lab experience. 1 Cr. (1-0).

AU 42 FUEL SYSTEMS II

Further study and lab experience with carburetors; manifolding; pumps; injection; L P systems; emission controls; fuels; diagnose, repair, test. 1 Cr. (1-2).

AU 43 DIAGNOSIS

Detailed theory and lab practice in deductive methods of analyzing and locating vehicle problems; use of modern testing equipment including the chassis dynamometer in testing electrical, carburetion, emissions, general engine condition; use of wheel aligner and balancer if applicable. 2 Cr. (1-4).

AU 45 CLIMATE CONTROL

Theory and practice in construction and service of passenger and commercial vehicle heating and air-conditioning units. 1 Cr. (1-2).

AU 47 TROUBLE SHOOTING AND TUNE-UP

Disassembly, repair, adjustment, reassemble and retesting of the various troublesome items as indicated by diagnosis, electrical retest, dynamometer rerun, as needed to prove correct repair and/or adjustments have been carried through. 2 Cr. (1-4).

AU 49 VEHICLE MAINTENANCE

Application of past learning to the care, service, P M and repair of passenger cars and light to light-medium and appropriate re-creation vehicles; order writing (based on diagnosis); other service sales; routing; parts requisitioning; repairs, adjustments; state inspection procedures, forms; TBA sales billing. 2 Cr. (1-3).

DM 21 DIESEL MECHANICS I

Theory and practicum relating to heat-ignition engines and their application to industry. 6 Ut. (3-9), 192 Hrs.

DM 22 DIESEL MECHANICS II

Continuation of DM 21; fuels and fuel systems; application to various vehicles. 6 Ut. (3-9), 192 Hrs.

DM 31 DIESEL MECHANICS III

Fuel systems; sub-assemblies and components. 6 Ut. (3-10.5), 216 Hrs.

DM 32 DIESEL MECHANICS IV

Fuel systems and their control; modern test instruments; on and off highway applications; hydraulics. 6 Ut. (3-10.5), 216 Hrs.

DM 41 DIESEL MECHANICS V

Trouble shooting; repair of prime movers--wheel and tracked; power trains; brakes and retarders; exhaust systems; vehicle controls. 6 Ut. (3-10.5), 216 Hrs.

DM 42 DIESEL MECHANICS VI

Lighting and instrumentation; hydraulics; pneumatics; controlled ventilation. 6 Ut. (3-10.5), 216 Hrs.

DT 31 FUEL SYSTEMS I

Study in detail of diesel fuel systems --pumps, injectors, nozzles, filters and governors and auxiliary controls; fuel characteristics and selection; dual-fuel systems study; testing, service and adjustment, and re-testing of various units and systems. 3 Cr. (2-3).

DT 32 BRAKES AND RETARDERS

Study of various braking systems for heavy vehicles from mechanical thru electric; advantages and applications of each; service, repair and adjust typical units; what and why of retarders--types, applications service/repair/adjust/typical units. 3 Cr. (2-3).

DT 37 CAB, BODY AND CHASSIS

To study standard frame, body, and cab configurations; special purpose designs; "standard" (DOT) cab interior; "customizing" of frames; materials used in manufacture; weight considerations, service problems and procedures. 1 Cr. (1-0).

DT 38 SUSPENSION

Front suspension design and application; rear suspension design and application; bogies--live and dead; semi-trailer and dolly suspension; fifth wheel; material/weight problems; service and repair procedures. 1 Cr. (1-2).

DT 43 TROUBLE SHOOTING AND TUNE-UP

Correlation of information from Diagnosis as it affects heavy duty vehicles; retest and readjust and test again as indicated until vehicle meets manufacturers' specifications and customer needs. 2 Cr. (1-4).

DT 44 FUEL SYSTEMS II

Strictly oriented to diesel or multi-fuel engines; injectors; nozzles; pumps; governors; direct versus indirect systems; L P and/or natural gas; emission (smoke) controls; blowers; turbochargers. 1 Cr. (1-2).

DT 45 DIAGNOSIS

Use of modern testing instruments and equipment--including engine dynamometer--to pinpoint problems in the various systems of the vehicle. 2 Cr. (1-4).

DT 49 VEHICLE MAINTENANCE

Dealing with medium heavy and off-highway vehicles; order writing based on diagnosis; service sales; job routing; parts requisitions and inventory; repairs; service adjustment; state inspection; TBA sales, billing, collection procedures. 2 Cr. (2-2).

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

AVIATION DEPARTMENT / Career Programs

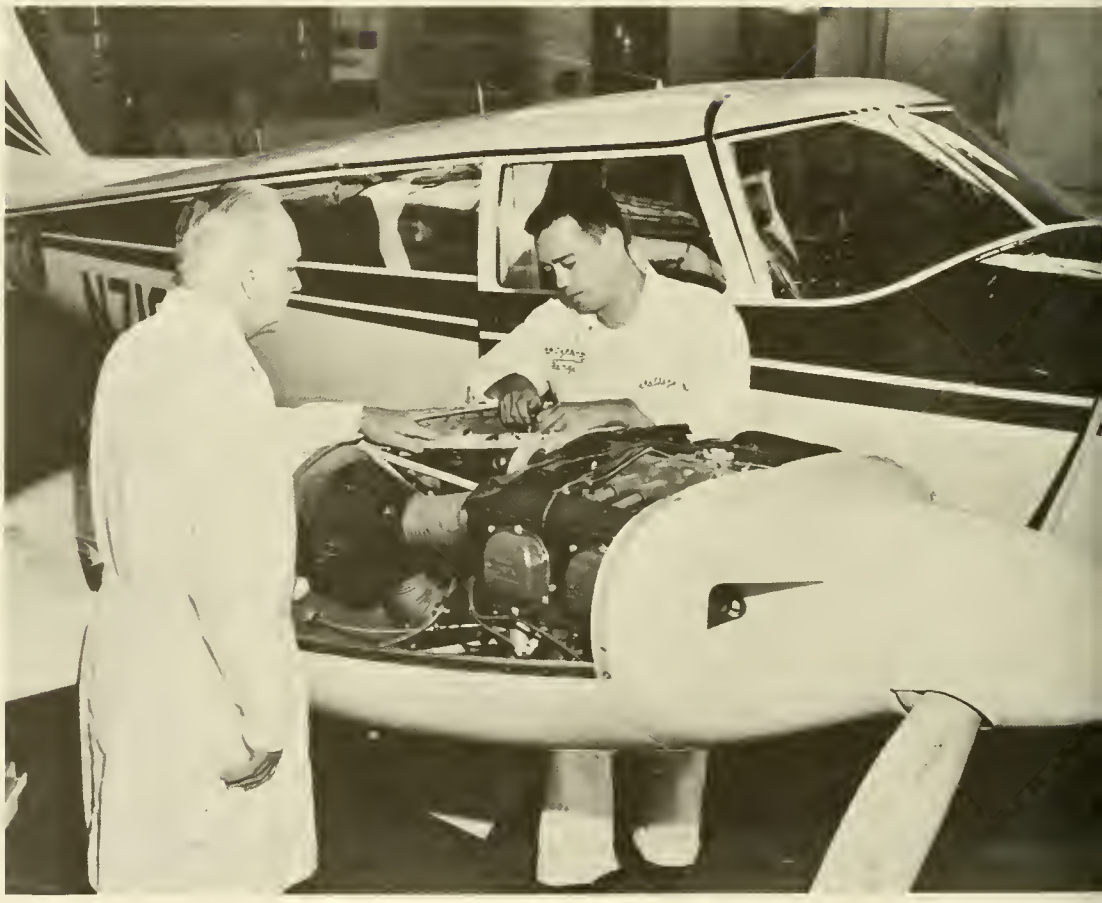
C. FRANK PANNEBAKER, Chairman

Associate Degree

CP Career Pilot Technology

Certificate

AC Aviation Maintenance Technician



CAREER PILOT TECHNOLOGY (CP)

Associate Degree / Two Years

If you are interested in becoming a career pilot, this program is where you begin. The curriculum includes the related and ground courses designed to prepare you for the Private, Commercial and Instrument written and oral examinations. The skill requirement is limited to Private Pilot level. To attain the full status of a CAREER PILOT, additional flight training and experience will be necessary. This added training is optional with each individual according to the ratings desired. All flight training costs are in addition to tuition and are listed in the Career Pilot Brochure.

Types of Jobs: Typical jobs with full Career Pilot status; flight instructor (with appropriate rating); corporate and charter pilot.

Job Opportunities: Adequate and increasing with the growth of the Aero-Space industry.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CP	11	Aeronautical Science I	3	3	0	48
CP	12	Navigational Science I	3	3	0	48
CP	13	Engine and Aircraft Structures	3	3	0	48
CP	14	Primary Flight I	1	.75	1.25	32
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
			16	16.75	3.25	320

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CP	21	Meteorology	3	3	0	48
CP	22	Aerodynamics	3	3	0	48
CP	23	Preventative Maintenance (Pilot)	2	2	0	32
CP	24	Primary Flight II	1	.7	1.5	32
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
			15	15.7	3.5	304

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CP	31	Navigational Science II	3	3	0	48
CP	32	Aeronautical Science II	3	3	0	48
ENG	13	Technical Writing	3	3	0	48
PHY	21	Physics-Mechanics	4	3	3	96
PSY	101	General Psychology	3	3	0	48
*PE		Physical Education	1	0	2	32
			17	15	5	320

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CP	41	Aeronautical Science III	3	3	0	48
CP	42	Instrument Flight Theory	3	3	0	48
ECO	11	Basic Economics	3	3	0	48
IM	31	Supervision-Human Relations	3	3	0	48
**Elective (General Studies)			3-4	3-4	0	48-64
*PE		Physical Education	1	0	2	32
			16-17	15-16	2	272-288

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Elective (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: Algebra and geometry; one year of science.

AVIATION MAINTENANCE TECHNICIAN (AC)

Certificate / Two Years

If you want to be an aircraft and powerplant maintenance technician, this is the program for you. You will receive theoretical and practical instruction in skills such as aircraft sheetmetal, electricity, welding, dope and fabric, hydraulics, aircraft powerplant maintenance, and trouble shooting.

This program is approved and licensed by the Federal Aviation Administration. Courses AC 11, AC 21, AC 31, AC 41, MAT 15, and ED 04 require a final grade of 70% or better as a passing grade. Full time attendance is required and any time absent from the above listed courses must be made up outside of normal school hours. A student will be dropped from the course in which he is absent for more than 5% of the time in the semester.

As a graduate of this program you will be qualified to take the Federal Aviation Administration's Aircraft Maintenance Technician written, oral and practical examinations. Upon successful completion of these examinations you will be awarded an Airplane and Powerplant Maintenance Certificate.

Types of Jobs: Maintenance technician for airlines, fixed base operators and manufacturer's services.

Job Opportunities: Unlimited with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

	Course	Units	Hours/Semester* Lect.	Lab./ Practicum	Total Hours Sem.
AC 11	General Airframe and Powerplant	17	196	212	408
ED 04	Aircraft Drawings	2	16	48	64
MAT 15	General Aviation Mathematics	3	48	0	48
		22	260	260	520

SECOND SEMESTER

	Course	Units	Hours/Semester* Lect.	Lab./ Practicum	Total Hours Sem.
AC 21	Basic Powerplant	18	188	284	472
ENG 03	Communications I	3	48	16	64
		21	236	300	536

THIRD SEMESTER

	Course	Units	Hours/Semester* Lect.	Lab./ Practicum	Total Hours Sem.
AC 31	Basic Airframe	17	172	300	472
ENG 04	Communications II	3	48	16	64
		20	220	316	536

FOURTH SEMESTER

	Course	Units	Hours/Semester* Lect.	Lab./ Practicum	Total Hours Sem.
AC 41	Advanced Airframe and Powerplant	19	228	244	472
ECO 02	Fundamentals of Economics	3	48	0	48
		22	276	244	520

*Because this is an FAA mandated program, hours are shown per semester and not per week as in other Applied Arts and Sciences program.

· Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *aviation department*

AC 11 GENERAL AIRFRAME AND POWERPLANT

Basic concepts of aircraft, powerplant, aircraft systems maintenance; aircraft, powerplant nomenclature; theory of operation, weight, balance; blueprint reading; mechanics privileges, limitations; publications, aircraft forms. 17 Ut. (196-212)*, 408 Hrs.

AC 21 BASIC POWERPLANT

Theory, construction, nomenclature, operation of internal combustion engines; trade tools; theory, maintenance of fuel; electrical, ignition, lubrication, jet, reciprocating propulsion systems. 18 Ut. (188-284)*, 472 Hrs.
Prerequisite: AC 11.

AC 31 BASIC AIRFRAME

Theory of flight; aircraft control systems; basic woodworking, hovering, skills in finishing, sheet metal, welding, rigging, assembly; operation and theory of aircraft electrical, hydraulic, pneumatic, air conditioning, fuel systems. 17 Ut. (172-300)*, 472 Hrs.
Prerequisite: AC 11.

**Lecture and lab hours are shown per semester, not per week.*

AC 41 ADVANCED AIRFRAME AND POWERPLANT

Review and advanced practice in structural repairs of all metal aircraft systems; live aircraft experience; service procedures; overhaul, testing, installation, operation of live engines; troubleshooting of fuel, electrical, ignition, instrument systems. 19 Ut. (228-244)*, 472 Hrs.
Prerequisites: AC 21, AC 31.

CP 11 AERONAUTICAL SCIENCE I

Theory of flight; elementary aerodynamics; major components and functions of aircraft; weight and balance; Federal Air Regulations; introduction to meteorology, reading teletype weather data, weather maps. 3 Cr. (3-0).
Corequisites: CP 12 and CP 13.

CP 12 NAVIGATIONAL SCIENCE I

Computers in the solution of basic navigational problems, aeronautical charts, pilot techniques; introduction to Airman's Information Manual, Airman's Guide, radio navigation, radio communications. 3 Cr. (3-0).
Corequisites: CP 11 and CP 13.

CP 13 ENGINE AND AIRCRAFT STRUCTURES

Theory, materials, methods of construction, lubrication and introduction systems, superchargers, general operation procedures, engine, propeller, aircraft. 3 Cr. (3-0).
Corequisites: CP 11, CP 12, CP 14.
Possible Private Pilot Certificate qualification.

CP 14 PRIMARY FLIGHT I

Phase I - An introduction to flight, thirty-two hours of instruction. (15 hours of dual flight time, 5 hours of solo flight time and 12 hours of oral briefing.) 1 Cr. (0.75-1.25).
Corequisites: CP 11, CP 12, CP 13.

CP 21 METEOROLOGY

Basic concepts of meteorology, temperature, pressures, moisture, stability, clouds, air masses, fronts, thunder storms, icing, fog; analysis and use of weather data; interpretation and use of U.S. Weather Bureau maps, reports, forecasts. 3 Cr. (3-0).
Prerequisite: Private Pilot Certificate.

CP 22 AERODYNAMICS

Aerodynamics as related to aircraft performance and stability; comparison of jet and reciprocating engines; operational considerations of design variations; emergency situations. 3 Cr. (3-0).
Prerequisite: Private Pilot Certificate.

CP 23 PREVENTATIVE MAINTENANCE (PILOT)

Familiarization with the responsibilities and limitations of the pilot in maintaining an aircraft as mandated by Federal Air Regulations, Part 43-3H. 2 Cr. (2-0).
Prerequisite: CP 14.

CP 24 PRIMARY FLIGHT II

Phase II - A continuation of Primary Flight I, thirty-two hours of instruction. (10 hours of dual flight time, 10 hours of solo flight time and 12 hours of oral briefing.) The successful completion of this phase should qualify the student to take the private pilot's licensing tests. 1 Cr. (0.7-1.5).
Prerequisites: CP 12, CP 14.

CP 31 NAVIGATIONAL SCIENCE II

Functioning, capabilities, limitations of radio navigation systems; computer solutions to navigation problems; radio navigation charts, Air Route Traffic Control System: introduction to instrument landing aids, instrument flying procedures. 3 Cr. (3-0).
Prerequisite: CP 12.

CP 32 AERONAUTICAL SCIENCE II

Fundamentals, instruments and regulations of safe flight. 3 Cr. (3-0).
Prerequisite: CP 11.

CP 41 AERONAUTICAL SCIENCE III

Theory, power sources and mechanics of aircraft systems: hydraulic, electrical, fuel oil, pressurization, anti-icing, instrumentation. 3 Cr. (3-0).
Prerequisite: CP 32.

CP 42 INSTRUMENT FLIGHT THEORY

Instrument flight control indoctrination for orientation, holding, tracking, cross country, departures, approaches; instrument clearance shorthand; practice in two-way radio communications; phraseology pertaining to instrument flight. 3 Cr. (3-0).

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

BUILDING CONSTRUCTION DEPARTMENT / Career Programs

C. BURT FRANCIS, Chairman

Associate Degree

CB Carpentry and Building Construction Technology

Certificate

CC Construction Carpentry
PL Plumbing and Heating
WP Wood-Patternmaking

CARPENTRY AND BUILDING CONSTRUCTION AND TECHNOLOGY (CB)

Associate Degree / Two Years

This program will provide you with the theoretical and technical aspects of light building construction. You will also explore principles and techniques of light-frame carpentry and masonry with emphasis on design, construction, cost estimation, and management.

Types of Jobs: Positions leading to foreman, building technician, or construction superintendent.

Job Opportunities: Unlimited with excellent starting salaries.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CB	10	Woodworking for Carpenters	4	2	6	128
CB	11	Construction Carpentry	4	2	6	128
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			15	11	16	432

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CB	24	Estimating and Blue Prints	2	2	0	32
CB	25	Block Construction	6	2	14	256
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
**Elective (General Studies)			3-4	3-4	0	48-64
*PE		Physical Education	1	0	2	32
			18-19	14-15	18	512-528

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CB	30	Roof-Framing Theory	3	3	0	48
CB	34	Brick Construction	5	2	9	176
EL	12	Basic Wiring Lab	2	1	5	96
ECO	11	Basic Economics	3	3	0	48
PHY	21	Physics-Mechanics	4	3	3	96
			17	12	17	464

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CB	40	Advanced Carpentry	4	2	6	128
CB	42	Building Construction Technology	6	3	9	192
CB	44	Concrete Construction	3	2	3	80
PHY	33	Physics-Heat and Light	4	3	3	96
			17	10	21	496

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Elective (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: Algebra and geometry; one year of science.

CONSTRUCTION CARPENTRY (CC)

Certificate / Two Years

Students enrolled in this program will receive laboratory instruction on the proper use of hand tools, portable power tools, portable power equipment, and become licensed in the use of power activated tools. Along with this, the necessary related classroom theory on methods, procedures, and materials will be given.

The major objective will be to parallel all instruction with situations and materials the student will encounter when entering the construction industry. This will include working on the actual construction of a residential building under the surveillance of qualified instructors.

Types of Jobs: Apprentice carpenters or masons, with advancement possibilities to journeyman, master, or foreman; also, employment in plants or factories where building units, components, or building materials are made or sold.

Job Opportunities: Unlimited with good starting wages. Advancement is limited only by your initiative.

FIRST SEMESTER

		Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
CC	01	Concrete and Block Masonry (Eight Weeks)	4.0	3	17	160
CC	02	Hand Tools (Eight Weeks)	0.5	1	0	8
CC	03	Introduction to the Framing Square (Eight Weeks)	1.0	2	1	24
CC	04	Brick and Stone Masonry (Eight Weeks)	4.0	3	17	160
CC	05	Portable Power Tools (Eight Weeks)	0.5	1	0	8
CC	06	Roof Framing (Eight Weeks)	1.0	2	1	24
MAT	10	General Mathematics	3.0	3	0	48
ENG	03	Communications I	3.0	3	1	64
			17.0	12	19	496

SECOND SEMESTER

		Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
CC	07	Framing and Sheathing (Eight Weeks)	4.0	3	17	160
CC	08	Introduction to Blueprint Reading (Eight Weeks)	0.5	1	0	8
CC	09	Building Construction Estimating (Eight Weeks)	1.5	3	0	24
CC	10	Exterior Finish (Eight Weeks)	4.0	3	17	160
CC	11	Practical Plan Reading (Eight Weeks)	0.5	1	0	8
CC	12	Building Trades Estimating (Eight Weeks)	1.5	3	0	24
AT	25	Basic Architectural Drafting	3.0	1	6	112
			15.0	8	23	496

THIRD SEMESTER

		Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
CC	13	Interior Finish (Eight Weeks)	5.5	5	18	184
CC	14	Exterior Materials (Eight Weeks)	0.5	1	0	8
CC	15	Interior Trim, Cabinets, and Stairs (Eight Weeks)	5.5	5	18	184
CC	16	Finish Materials (Eight Weeks)	0.5	1	0	8
ENG	04	Communications II	3.0	3	1	64
ECO	02	Fundamentals of Economics	3.0	3	0	48
			18.0	12	19	496

FOURTH SEMESTER

		Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
CC	17	Speciality Trades (Eight Weeks)	5.0	5	17	176
CC	18	Personal Orientation (Eight Weeks)	1.5	3	0	24
CC	19	Related Trades (Eight Weeks)	4.0	3	17	160
CC	20	Job Orientation (Eight Weeks)	1.5	3	0	24
BM	47	Small Business Management	3.0	3	0	48
MAT	20	Algebra	3.0	3	0	48
			18.0	13	17	480

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with the concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

PLUMBING AND HEATING (PL)

Certificate / Two Years

As a student in the Plumbing Program, you will be taught the basic theories of plumbing and heating, soil waste and vent layout, household and industrial maintenance, sewage systems, and the use of hand and power tools. The fundamentals of communications and mathematics will also be covered, and you will be trained in all types of plumbing and heating repair work to insure job choice and top pay when you graduate.

Types of Jobs: Plumbing and heating installation, industrial maintenance, public utilities service, machine work, and ship building industries.

Job Opportunities: Excellent starting wages and opportunities for rapid advancements.

FIRST SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
PL 10	Plumbing and Heating I	6	3	9	192
PL 15	Plumbing and Heating II	6	3	9	192
ENG 03	Communications I	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		18	12	19	496

SECOND SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
PL 20	Plumbing and Heating III	6	3	9	192
PL 21	Plumbing and Heating IV	6	3	9	192
ENG 04	Communications II	3	3	1	64
MAT 20	Algebra	3	3	0	48
		18	12	19	496

THIRD SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
PL 30	Plumbing and Heating V	6	3	9	192
PL 31	Plumbing and Heating VI	6	3	9	192
ECO 02	Fundamentals of Economics	3	3	0	48
BM 47	Small Business Management	3	3	0	48
		18	12	18	480

FOURTH SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
PL 40	Plumbing and Heating VII	6	3	9	192
PL 41	Plumbing and Heating VIII	6	3	9	192
WE 01	Acetylene Welding	1	0	5	80
WE 02	Electric Welding	1	0	5	80
		14	6	28	544

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with the concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

WOOD-PATTERNMAKING (WP)

Certificate / Two Years

The Wood-Patternmaking Program offers you training on all types of woodworking equipment commonly used in patternshops. In addition, you will receive training in the care and use of hand tools required of the patternmaker. As a patternmaker, you will become skilled in preparing, shaping, or building wood and other adaptable materials into models to be used in preparing molds for casting any of the required shapes in modern industry.

Types of Jobs: Patternmaker, cabinet maker, model maker, woodworking machine operator, production woodworker.

Job Opportunities: Unlimited with good starting wages.

FIRST SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED 01	Mechanical Drawing	2	1	3	64
WP 10	Wood-Patternmaking I	8	1	21	352
ENG 03	Communications I	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		16	8	25	528

SECOND SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
WP 20	Wood-Patternmaking II	9	1	25	416
ENG 04	Communications II	3	3	1	64
MAT 20	Algebra	3	3	0	48
		15	7	26	528

THIRD SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
WP 30	Wood-Patternmaking III	9	1	25	416
ECO 02	Fundamentals of Economics	3	3	0	48
		12	4	25	464

FOURTH SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
WP 40	Wood-Patternmaking IV	9	1	25	416
PHY 20	Physics Survey	3	3	0	48
ED 12	Industrial Processes	2	2	1	48
		14	6	26	512

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with the concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *building construction department*

CB 10 WOODWORKING FOR CARPENTERS

Basic principles and skills of hand and machine woodworking operations; special projects. 4 Cr. (2-6).

CB 11 CONSTRUCTION CARPENTRY

Basic principles of frame construction: foundations and concrete formwork, types of building frames, strength of beams and girders, structural sheathing and house details; ideas and trends in construction methods and techniques. 4 Cr. (2-6).

CB 24 ESTIMATING AND BLUEPRINTS

Introduction; types of drawings; lines, marks, symbols, conventions, scales, dimensions; quantities of material and cost estimating. 2 Cr. (2-0).

CB 25 BLOCK CONSTRUCTION

Block laying skills in lab; practical work; classroom instruction covering materials used, types and sizes of blocks, principles of cost estimation. 6 Cr. (2-14).

CB 30 ROOF-FRAMING THEORY

Principles of rafter layout, use of framing square, problems of roof framing and construction, types of roofs and rafters. 3 Cr. (3-0).

CB 34 BRICK CONSTRUCTION

Laying various patterns of brick to meet industrial standards with speed and accuracy; following architect's drawings; chimney, fireplace and wall projects. 5 Cr. (2-9).

CB 40 ADVANCED CARPENTRY

Advanced woodworking techniques and fundamentals of finished carpentry; modern finishing materials; methods of application; exterior and interior trim; millwork, cornice work, roofing, siding, frame for openings, interior wall and ceiling material; trim and moldings; built-in cabinet-work; stairbuilding; school-sponsored construction work. 4 Cr. (2-6).

CB 42 BUILDING CONSTRUCTION TECHNOLOGY

Advanced technical aspects of building construction, solution of practical problems; special advanced projects, campus construction work including house construction projects. 6 Cr. (3-9).

CB 44 CONCRETE CONSTRUCTION

Principles of concrete design, water-cement ratio, proportions of ingredients, reinforced concrete, study of concrete footers and walls, finishing with hand and power trowel equipment, proper methods of curing and testing. 3 Cr. (2-3).

CC 01 CONCRETE AND BLOCK MASONRY

The methods and materials used in laying out and building block and concrete walls, as well as those principles used in forming, pouring and finishing of concrete footings, reinforced concrete and concrete slabs, are studied and applied. Appropriate tools are introduced and instruction in their proper use and care is offered. 4 Ut. (3-17), 160 Hrs.

CC 02 HAND TOOLS

An introduction to the tools and equipment of the construction industry. Basically theory, the course will present to the student a wide variety of specialized tools and equipment in order to familiarize him with their use and care. While demonstrations will be used extensively, no attempt will be made to instruct the student, this being left to appropriate times during courses that are essentially practicum. 0.5 Ut. (1-0), 8 Hrs.

CC 03 INTRODUCTION TO THE FRAMING SQUARE

The course is developed to give the student a working knowledge of the framing square and stresses its many uses in the construction industry. It offers the student adequate opportunity to compute and lay-out common rafters, hip rafters, and jack rafters, etc. 1.0 Ut. (2-1), 24 Hrs.

CC 04 BRICK AND STONE MASONRY

A study is made of brick and stone products that are currently being used in construction, with emphasis being placed on common methods of applying these materials. Through application of these methods within the shop and

wherever possible, through permanent projects outside the shop, the student will be given the opportunity to discover and develop his skills. 4.0 Ut. (3-17), 160 Hrs.

CC 05 PORTABLE POWER TOOLS

Basically theory, this course will familiarize the student with the proper nomenclature and uses of the portable power tools and equipment of the building industry. Practical application and safety will be extensively surveyed through demonstrations. 0.5 Ut. (1-0), 8 Hrs.

CC 06 ROOF FRAMING

The course is developed to give the student a working knowledge of the framing square and stresses its many uses in the construction industry. It offers the student adequate opportunity to compute and lay-out common rafters, hip rafters, and jack rafters. 1.0 Ut. (2-1), 24 Hrs.

CC 07 FRAMING AND SHEATHING

The principles of framing and sheathing are studied, and the opportunity to apply this knowledge is afforded through shop and outside projects. Particular emphasis is placed on the materials, new and traditional, being used in this basic and important phase of construction. 4.0 Ut. (3-17), 160 Hrs.

CC 08 INTRODUCTION TO BLUEPRINT READING

This basic course is designed to encourage the development of techniques in the reading and interpreting of blueprints and specifications. Instruction is given in the reading of plan views, elevations and details, as typical of working drawings, and the math principles involved in the understanding and use of these drawings are reviewed. 0.5 Ut. (1-0), 8 Hrs.

CC 09 BUILDING CONSTRUCTION ESTIMATES

In order for the craftsman to function properly, it is necessary for him to be knowledgable of the cost involved. This course will include both residential and commercial estimating with the emphasis being placed on types of estimates and quantity take offs. The student will be encouraged to use proper techniques and procedures to arrive at realistic construction costs. 1.5 Ut. (3-0), 24 Hrs.

CC 10 EXTERIOR FINISH

Although basically concerned with developing and enhancing skills in the selection and use of siding and roofing materials, the course also offers experience in door and window framing, exterior trim, cornice work and insulation materials and methods. 4 Ut. (3-17), 160 Hrs.

CC 11 PRACTICAL PLAN READING

In this course the student, having learned the principles of blueprint reading (CC-08), gains practical experience in reading and interpreting the plans, elevations, section, structural details, etc. that are found in a complete set of working drawings. In addition, he learns the importance of specifications and how to use them. 0.5 Ut. (1-0), 8 Hrs.

CC 12 BUILDING TRADES ESTIMATING

Building Trades Estimating is planned for classroom and home study. Processes and procedures will be covered to give the student a working knowledge of various trades and how realistic construction costs are obtained for completed projects. 1.5 Ut. (3-0), 24 Hrs.

CC 13 INTERIOR FINISH

Instruction is given in the selection and application of materials used for interior walls, ceilings and floors. Ample opportunity is afforded the student to actually use these materials, and the tools generally associated with them, through both shop and permanent installations. 5.5 Ut. (5-18), 184 Hrs.

CC 14 EXTERIOR MATERIALS

A survey is conducted of the materials used in the building trades. Emphasis will be placed on the wide range of materials that are currently available for all phases of construction. Special attention will be given to the development and introduction of new products within the industry and the necessity of keeping informed of changes and improvements. 0.5 Ut. (1-0), 8 Hrs.

CC 15 INTERIOR TRIM, CABINETS AND STAIRS

Presents a broad area of building construction, including door hanging, moldings and trim, built-in features, stair building and kitchen cabinets. The course is designed to offer the student a wide range of information and, wherever possible and practical, provide for adequate experience in the use of the methods and materials studied. 5.5 Ut. (5-18), 184 Hrs.

CC 16 FINISH MATERIALS

The list of construction material is constantly growing. Emphasis will be placed on the basic construction materials. Recommended methods and description of how these materials can be used to the best advantage, and the fundamental aspects of all the important materials used in modern construction. 0.5 Ut. (1-0), 8 Hrs.

CC 17 SPECIALTY TRADES

Surveys the specialty areas, from wall and floor covering to decorating. Instruction and practical experience is offered the student in the use of such products as carpeting, sheet goods, resilient tiles and ceramic tiles, and includes instruction in the techniques of dry wall finishing. Plastering, paper hanging, and painting will be studied although the use of these materials will be limited. 5.0 Ut. (5-17), 176 Hrs.

CC 18 PERSONAL ORIENTATION

An introduction to practical techniques in self-evaluation stressing the importance of values, interests, personality, and attitude in determining work success. Emphasis will be placed on the establishing of realistic work goals and expectations based on the student's knowledge of himself. 1.5 Ut. (3-0), 24 Hrs.

CC 19 RELATED TRADES

The student will be introduced to a wide range of trades which are of major importance in building construction such as: plumbing, heating, electrical wiring, landscaping, excavation. He will spend a brief period of time in each of seven related areas, gaining basic knowledge of these areas and their relationship to his own, and thereby, greater appreciation of the importance of these trades. Wherever possible, he will be given the opportunity to use the tools and materials of these trades in order to become familiar with them but not necessarily to become proficient in their use. 4.0 Ut. (3-17), 160 Hrs.

CC 20 JOB ORIENTATION

A survey of the problems the beginning workman faces as he prepares to take his place in the world of work. Methods and techniques of gaining employment will be discussed in detail as well as proven methods of maintaining employment. An introduction to simple business processes will be given in order to familiarize the student with the causes for many of the employers' actions. 1.5 Ut. (3-0), 24 Hrs.

PL 10 PLUMBING AND HEATING I

Introduction to Plumbing and Heating trade; use of hand and power tools; introduction to cast iron, terra cotta, copper, iron, fiber, and etc. Pipe fundamentals; safety procedures. 6 Ut. (3-9), 192 Hrs.
Prerequisite: None.

PL 15 PLUMBING AND HEATING II

Theory, materials, and methods for venting and draining plumbing systems; installation of septic systems; individual projects. 6 Ut. (3-9), 192 Hrs.
Prerequisite: None.

PL 20 PLUMBING AND HEATING III

Domestic hot water distribution, etc.; basic science; basic steam and hot water heating; individual projects installing bathrooms, toilet rooms, etc. 6 Ut. (3-9), 192 Hrs.
Prerequisite: None.

PL 21 PLUMBING AND HEATING IV

Types of steamheating systems; types of hot water systems; boilers; piping; heat transfer equipment; accessories individual plumbing and heating projects; estimating heat loss. 6 Ut. (3-9), 192 Hrs.
Prerequisite: None.

PL 30 PLUMBING AND HEATING V

Introduction to blueprint reading and pipe drafting; material ordering; repair work; rigging; individual projects and live work. 6 Ut. (3-9), 192 Hrs.
Prerequisite: None.

PL 31 PLUMBING AND HEATING VI

Advanced blueprint reading; estimating of materials; design and layout of plumbing and heating systems; individual projects and live work. 6 Ut. (3-9), 192 Hrs.
Prerequisite: None.

PL 40 PLUMBING AND HEATING VII

Use of lead working tools; bending lead pipe; preparing lead pipe for wiping; introduction to lead wiping; individual projects and live work. 6 Ut. (3-9), 192 Hrs.
Prerequisite: None.

PL 41 PLUMBING AND HEATING VIII

Wiping round, branch, and vertical lead joints; building maintenance; live work 6 Ut. (3-9), 192 Hrs.
Prerequisite: None.

WP 10 WOOD – PATTERNMAKING I

Designed to give basic knowledge of making patterns, using wood working machines; methods of gluing lumber to produce strength. 8 Ut. (1-21), 352 Hrs.

WP 20 WOOD – PATTERNMAKING II

Types of construction of patterns and core boxes used in molding practices. 9 Ut. (1-25), 416 Hrs.

WP 30 WOOD – PATTERNMAKING III

Advanced practice in wood patternmaking: jigs and fixtures, special types of patterns: loose pieces, interchangeable pieces. 9 Ut. (1-25), 416 Hrs.

WP 40 WOOD – PATTERNMAKING IV

Knowledge of production type patterns, master patterns, match plate work; checking of patterns and core boxes. 9 Ut. (1-25), 416 Hrs.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

BUSINESS ADMINISTRATION DEPARTMENT / Career Programs

DONALD B. BERGERSTOCK, Chairman

Associate Degree

BA Accounting
BM Business Management
BS Secretarial Science - Executive
- Legal
- Medical

Certificate

BT Clerk-Typist

ACCOUNTING (BA)

Associate Degree / Two Years

The accounting sequence is designed to give you a broad business background with specilization in the field of accounting. You will begin on the elementary levels of accounting and business principles and will advance into the more complex stages.

Types of Jobs: Public, private, government, corporate, cost accounting; tax consultant; auditor; comptroller.

Job Opportunities: Tremendous growth of small and big business has increased the demands for well-trained accountants. Excellent starting salaries with opportunities for professional growth.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	12	Accounting I	3	3	1	64
BM	13	Principles of Business	3	3	0	48
BM	21	Business Communications	3	3	0	48
BM	23	Business Mathematics	3	3	0	48
BS	15	Typewriting I	3	2	3	80
*PE		Physical Education	1	0	2	32
			16	14	6	320

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	22	Accounting II	3	3	1	64
BM	24	Office Procedures	2	1	4	80
BM	33	Business Organization and Management	3	3	0	48
CS	03	Introduction to Data Processing	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
MAT	11	Basic Algebra	3	3	0	48
*PE		Physical Education	1	0	2	32
			18	16	8	384

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	32	Intermediate Accounting I	3	3	0	48
BA	42	Cost Accounting	3	3	0	48
BM	31	Business Law I	3	3	0	48
CS	05	Business Computer Programming	3	3	0	48
ENG	211	Fundamentals of Speech	3	3	0	48
PSY	101	General Psychology	3	3	0	48
			18	18	0	288

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	44	Intermediate Accounting II	3	3	0	48
BA	45	Income Tax Accounting	3	3	0	48
BM	41	Business Law II	3	3	0	48
ECO	46	Business Economics	3	3	0	48
**Elective			3-4	3-4	0	48-64
			15-16	15-16	0	240-256

*Males: PE 105, 106, 107 108.
Females: PE 115, 116, 117, 118.

**Electives: Any associate degree course (including Liberal Arts) with the approval of the Department Chairman and the Dean.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

BUSINESS MANAGEMENT (BM)

Associate Degree / Two Years

Executive or management positions are goals of the Business Management Program. The program sequence will provide you with basic business knowledge. You will study management theory and application procedures. Business concepts and implications for our economy will be covered.

Types of Jobs: Junior-executive or management-trainee positions in manufacturing, retailing, finance, banking, insurance, marketing, government.

Job Opportunities: Three or four job offers per graduate with excellent starting salaires and opportunities for advancement.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	12	Accounting I	3	3	1	64
BM	13	Principles of Business	3	3	0	48
BM	21	Business Communications	3	3	0	48
BM	23	Business Mathematics	3	3	0	48
BS	15	Typewriting I	3	2	3	80
*PE		Physical Education	1	0	2	32
			16	14	6	320

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	22	Accounting II	3	3	1	64
BM	24	Office Procedures	2	1	4	80
BM	33	Business Organization and Management	3	3	0	48
CS	03	Introduction to Data Processing	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
MAT	11	Basic Algebra	3	3	0	48
*PE		Physical Education	1	0	2	32
			18	16	8	384

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM	31	Business Law I	3	3	0	48
BM	36	Marketing	3	3	0	48
CS	05	Business Computer Programming	3	3	0	48
ENG	211	Fundamentals of Speech	3	3	0	48
PSY	101	General Psychology	3	3	0	48
**Elective			3-4	3-4	0	48-64
			18-19	18-19	0	288-304

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	45	Income Tax Accounting	3	3	0	48
BM	41	Business Law II	3	3	0	48
BM	45	Finance	3	3	0	48
ECO	46	Business Economics	3	3	0	48
**Elective			3-4	3-4	0	48-64
			15-16	15-16	0	240-256

*Males: PE 105, 106, 107 108.
Females: PE 115, 116, 117, 118.

**Electives: Any associate degree course (including Liberal Arts) with the approval of the Department Chairman and the Dean.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

SECRETARIAL SCIENCE - EXECUTIVE (BS)

Associate Degree / Two Years

The Secretarial Science - Executive Program is designed to give you proficiency in executive secretarial skills with a strong background in liberal studies.

Types of Jobs: Business office in commerce, government, industry, or the professions.

Job Opportunities: Excellent with top salaries.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	11	Elementary Accounting	3	3	1	64
BM	14	Office Machines	2	1	4	80
BM	21	Business Communications	3	3	0	48
BM	23	Business Mathematics	3	3	0	48
BS	15	Typewriting I	3	2	3	80
BS	14	Shorthand I	3	3	2	80
*PE		Physical Education	1	0	2	32
			18	15	12	432

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BS	21	Typewriting II	3	2	3	80
BS	23	Office Practice	2	2	1	48
BS	24	Shorthand II	3	3	2	80
ECO	46	Business Economics	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
PSY	101	General Psychology	3	3	0	48
or						
SOC	101	Introduction to Sociology				
*PE		Physical Education	1	0	2	32
			18	16	9	400

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM	13	Principles of Business	3	3	0	48
BS	31	Typewriting III	3	2	3	80
BS	34	Shorthand Workshop	7	5	6	176
ENG	211	Fundamentals of Speech	3	3	0	48
			16	13	9	352

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM	33	Business Organization and Management	3	3	0	48
BS	44	Secretarial Workshop	9	6	9	240
BS	45	Office Internship	1	0	3	48
**Elective			3-4	3-4	0	48-64
			16-17	12-13	12	384-400

*Males: PE 105, 106, 107 108.
Females: PE 115, 116, 117, 118.

**Electives: Any associate degree course (including Liberal Arts) with the approval of the Department Chairman and the Dean.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

SECRETARIAL SCIENCE - LEGAL (BS)

Associate Degree / Two Years

The Secretarial Science - Legal Program is designed to give you proficiency in legal secretarial skills with a strong background in liberal studies.

Types of Jobs: Business, commerce, and law.

Job Opportunities: Excellent with top salaries.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	11	Elementary Accounting	3	3	1	64
BM	14	Office Machines	2	1	4	80
BM	21	Business Communications	3	3	0	48
BM	23	Business Mathematics	3	3	0	48
BS	15	Typewriting I	3	2	3	80
BS	14	Shorthand I	3	3	2	80
*PE		Physical Education	1	0	2	32
			18	15	12	432

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BS	21	Typewriting II	3	2	3	80
BS	23	Office Practice	2	2	1	48
BS	24	Shorthand II	3	3	2	80
ECO	46	Business Economics	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
PSY	101	General Psychology	3	3	0	48
		or				
SOC	101	Introduction to Sociology				
*PE		Physical Education	1	0	2	32
			18	16	9	400

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM	31	Business Law I	3	3	0	48
BS	31	Typewriting III	3	2	3	80
BS	34	Shorthand Workshop	7	5	6	176
ENG	211	Fundamentals of Speech	3	3	0	48
			16	13	9	352

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM	41	Business Law II	3	3	0	48
BS	44	Secretarial Workshop	9	6	9	240
BS	45	Office Internship	1	0	3	48
**Elective			3-4	3-4	0	48-64
			16-17	12-13	12	384-400

*Males: PE 105, 106, 107 108.
Females: PE 115, 116, 117, 118.

**Electives: Any associate degree course (including Liberal Arts) with the approval of the Department Chairman and the Dean.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

SECRETARIAL SCIENCE - MEDICAL (BS)

Associate Degree / Two Years

The Secretarial Science - Medical Program is designed to give you proficiency in medical secretarial skills with a strong background in liberal studies.

Types of Jobs: Doctors, dentists, and the various Health Occupations offices as well as work in the hospitals.

Job Opportunities: Excellent with top salaries.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	11	Elementary Accounting	3	3	1	64
BM	14	Office Machines	2	1	4	80
BM	21	Business Communications	3	3	0	48
BM	23	Business Mathematics	3	3	0	48
BS	15	Typewriting I	3	2	3	80
BS	14	Shorthand I	3	3	2	80
*PE		Physical Education	1	0	2	32
			18	15	12	432

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BS	21	Typewriting II	3	2	3	80
BS	23	Office Practice	2	2	1	48
BS	24	Shorthand II	3	3	2	80
ECO	46	Business Economics	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
ST	25	Anatomy and Physiology	3	3	0	48
*PE		Physical Education	1	0	2	32
			18	16	9	400

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BS	31	Typewriting III	3	2	3	80
BS	34	Shorthand Workshop	7	5	6	176
ENG	211	Fundamentals of Speech	3	3	0	48
ST	30	Medical Terminology	3	3	0	48
			16	13	9	352

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BS	44	Secretarial Workshop	9	6	9	240
BS	45	Office Internship	1	0	3	48
PSY	101	General Psychology	3	3	0	48
	or					
SOC	101	Introduction to Sociology				
**Elective			3-4	3-4	0	48-64
			16-17	12-13	12	384-400

*Males: PE 105, 106, 107 108.
Females: PE 115, 116, 117, 118.

**Electives: Any associate degree course (including Liberal Arts) with the approval of the Department Chairman and the Dean.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

CLERK-TYPIST CERTIFICATE (BT)

Certificate / One Year

The one year Clerk-Typist Program is designed to give you fundamentals in typewriting and business machine calculation. You will master indexing principles, filing, and basic office procedures. You may elect shorthand, accounting, or other related courses to aid you in your vocation.

Types of Jobs: Clerk-typist, business machine operator, filing, general clerical and elementary accounting work, shorthand transcription.

Job Opportunities: Unlimited; starting salaries are dependent upon the duties you perform.

FIRST SEMESTER

Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM 14 Office Machines	2	1	4	80
BS 15 Typewriting I	3	2	3	80
BS 12 Clerical Procedures	7	5	6	176
ENG 03 Communications I	3	3	1	64
MAT 10 General Mathematics	3	3	0	48
*Elective (General Studies)	3-4	3-4	0	48-64
	21-22	17-18	14	496-512

SECOND SEMESTER

Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM 21 Business Communications	3	3	0	48
BM 23 Business Mathematics	3	3	0	48
BS 25 Clerical Workshop	10	7	11	288
ENG 04 Communications II	3	3	1	64
*Elective (General Studies)	3-4	3-4	0	48-64
	22-23	19-20	12	496-512

*Electives: Any associate degree course (including Liberal Arts) with the approval of the Department Chairman and the Dean.

COURSE DESCRIPTIONS / *business administration department*

BA 11 ELEMENTARY ACCOUNTING

This course is designed as a basic course in accounting for those students in Secretarial Science, Industrial Management, Forestry, Food Service, etc. This course will develop those accounting principles and theories which will prepare the student for employment in a single proprietorship form of business. 3 Cr. (3-1).

BA 12 ACCOUNTING I

Introduction to basic accounting principles: accounting cycle; preparation and interpretation of statements and reports for proprietorships and partnerships. 3 Cr. (3-1).

BA 22 ACCOUNTING II

Advanced accounting principles as they apply to different forms of business: corporate accounting, problems of manufacturing, departmental and branch operations. 3 Cr. (3-1).
Prerequisite: BA 12 or Department Permission.

BA 32 INTERMEDIATE ACCOUNTING I

Intangible assets, liabilities, stockholders equities; analysis and interpretation of financial reports, statements. 3 Cr. (3-0).
Prerequisite: BA 22.

BA 42 COST ACCOUNTING

Records and inventories, business transactions, determining costs after processing, profit through distribution. 3 Cr. (3-0).
Prerequisite: BA 22.

BA 44 INTERMEDIATE ACCOUNTING II

Intermediate Accounting II deals with noncurrent assests, liabilities; investments, plant, equipment, intangibles, long-term liabilities; stockholder's equity: paid-in capital, retained earnings; various analytical processes using comparative data, special ratios, measurements. 3 Cr. (3-0).
Prerequisite: BA 32 or Department Permission.

BA 45 INCOME TAX ACCOUNTING

Designed to familiarize the student with the different rules and regulations regarding Federal and Pennsylvania State income taxes. Federal and Pennsylvania State tax deductions, credits, exemptions, rates, computations and the various forms that students should be familiar with will be stressed throughout this course. 3 Cr. (3-0).

BA 46 AUDITING

Designed to offer a thorough knowledge of auditing through the application of principles and adherence to auditing

standards. Such things as: internal controls, the field of auditing and public accounting, audit techniques, audit work papers, verification of accounts, reporting the audit and internal auditing are discussed throughout the course. 3 Cr. (3-0).

BM 13 PRINCIPLES OF BUSINESS

Basic business procedures, business in American economic systems. 3 Cr. (3-0).

BM 14 OFFICE MACHINES

Understanding and operation of ten-key, full-keyboard-adding-listing, rotary, key-driven calculator machines. 2 Cr. (1-4), 80 Hrs.

BM 21 BUSINESS COMMUNICATIONS

English usage, both oral and written; transcription of business letters; collateral reading. 3 Cr. (3-0), 48 Hrs.

BM 23 BUSINESS MATHEMATICS

Mathematics of installment buying; discounting notes, drafts, insurance contracts, property and income taxes, social security, stocks, bonds, transportation; graphs, measurements, business records. 3 Cr. (3-0), 48 Hrs.

BM 24 OFFICE PROCEDURES

Office forms, mail, filing, telephone, office management; instruction and practice in business machines: ten-key full-keyboard, adding-listing, rotary, key-driven calculators, duplicating, dictating, transcribing. 2 Cr. (1-4).

BM 31 BUSINESS LAW I

Evolution of law, individual and business contracts, negotiable instruments, personal property sales, bailment contracts. 3 Cr. (3-0).

BM 33 BUSINESS ORGANIZATION AND MANAGEMENT

Structure, establishment and financing of sole proprietorships, partnerships, corporations; elements of an organization; principles of authority, accountability and responsibility; levels' theory; communication; policy formulation; incentive and efficiency. 3 Cr. (3-0).

BM 35 BUSINESS PSYCHOLOGY

Personal adjustments for employees; modern business behavior problems. 3 Cr. (3-0).

BM 36 MARKETING

Merchandising methods; distribution channels; pricing; cost; brands; government regulations; influence of buyer and consumers on marketing programs; current marketing trends. 3 Cr. (3-0).

BM 37 BANKING AND INVESTMENTS

Banking industry as related to business and economic growth, personal and business banking services, stocks and bonds marketing. 3 Cr. (3-0).

BM 38 INSURANCE

Structure and practice of insurance field; types and uses of policies; importance of insurance. 3 Cr. (3-0).

BM 39 REAL ESTATE

Real estate basics: real property ownership, lease arrangements, legal aspects of property transactions; functions and procedures of real estate broker. 3 Cr. (3-0).

BM 41 BUSINESS LAW II

Insurance law contracts; surety and guaranty agreements; partnerships; corporations; real property; wills; bankruptcy proceedings; court systems; lawsuit procedures. 3 Cr. (3-0). *Prerequisite: BM 31.*

BM 42 RETAILING

Designed to familiarize the student with the field of retailing. This course will provide the technical and theoretical knowledge necessary for retail management employment. 3 Cr. (3-0).

BM 43 SALESMANSHIP

Salesmanship examines the positive role personal selling plays in the American economy and documents the extent to which selling has aided in our economic growth. This course is designed to show the salesmanship role in helping customers recognize and satisfy wants and needs, and how this satisfaction can lead to a higher standard of living. 3 Cr. (3-0)

BM 45 FINANCE

Private and public finance; monetary and credit systems, policies, problems; factors affecting supply of funds. 3 Cr. (3-0).

BM 47 SMALL BUSINESS MANAGEMENT

Location, plant layout, financial problems, records, forms, purchasing, inventory, employer-employee relations, basic business law, and improvement of small business enterprises. 3 Cr. (3-0).

BS 09 TYPEWRITING

Only for non-business students; touch typing, accuracy, speed, report copy, business letters and reports. 1 Cr. (1-2), 48 Hrs.

BS 11 BUSINESS BEHAVIOR

Personal evaluations, good working habits and attitudes. 2 Cr. (2-1).

BS 12 CLERICAL PROCEDURES

Office duties: handling mail, filing, reception work, office communication systems; development of personal qualities necessary for success, self-evaluation; good working habits and attitudes; opportunity for personality development. 7 Ut. (5-6), 176 Hrs.

BS 14 SHORTHAND I

Basic of Gregg shorthand, Diamond Jubilee system; outlines; proper techniques; fluency in reading and writing shorthand; dictation. 3 Cr. (3-2).

BS 15 TYPEWRITING I

Basics of typewriting: touch typing, mechanical parts, speed, accuracy, business letters and forms. Students passing required standards may be exempt and may elect another subject. 3 Cr. (2-3), 80 Hrs.

BS 21 TYPEWRITING II

Advanced typing practices, production typing, special skill techniques, advanced letter writing and tabulation reports, legal forms and documents, clerical duties. 3 Cr. (2-3).
Prerequisite: BS 15 or test qualification.

BS 23 OFFICE PRACTICE

Operation and practice of ditto, mimeograph, dictating, and transcribing machines; general office practice. 2 Cr. (2-1).

BS 24 SHORTHAND II

Continuation of BS 14; pre-transcription training; vocabulary, spelling, punctuation stressed. 3 Cr. (3-2).
Prerequisite: BS 14 or test qualification.

BS 25 CLERICAL WORKSHOP

Advanced and office-level typewriting; typing of manuscripts, reports, office forms, statistics, production work; advanced office machines: instruction and practice on duplicating equipment, dictation, transcription equipment, bookkeeping machines, electronic calculators. 10 Ut. (7-11), 288 Hrs.
Prerequisites: BS 12 and BS 15.

BS 31 TYPEWRITING III

Composing skills, report and manuscript typing, statistical reports, advanced production typing. 3 Cr. (2-3).
Prerequisite: BS 21.

BS 34 SHORTHAND WORKSHOP

Speed and accuracy dictation and transcription of business letters; business and industry dictation; business forms and office skills; medical, legal, technical shorthand specialization; basic executive skills. 7 Cr. (5-6).
Prerequisite: BS 24.

BS 44 SECRETARIAL WORKSHOP

Advanced dictation and transcription skills; specialization in medical, legal, technical and executive fields; executive office functions; practical experience. 9 Cr. (6-9).
Prerequisite: BS 34.

BS 45 OFFICE INTERNSHIP

Practical experience obtained through work assignments in college offices. 1 Cr. (0-3).

ST 25 ANATOMY AND PHYSIOLOGY

A study of basic human anatomy and physiology; cells, tissues, and tumors; nervous, excretory, reproductive, and endocrine systems; diseases; principles of chemistry, microbiology and physics. 3 Cr. (3-0).

ST 30 MEDICAL TERMINOLOGY

An introduction of medical terminology with emphasis on etiology, symptomatology, pathology, and diagnostic procedures as related to secretarial functions. 3 Cr. (3-0).

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

COMPUTER SCIENCE DEPARTMENT / Career Program

GEORGE P. WOLFE, Chairman

Associate Degree

CS Computer Science Technology

COMPUTER SCIENCE TECHNOLOGY (CS)

Associate Degree / Two Years

This program is designed to meet the ever-increasing demand for trained personnel in the fields of computing systems and electronic data processing. The program provides a broad and thorough knowledge of programming techniques and experience in operation of computer systems and peripheral data processing equipment. The curriculum offers a strong secondary background in business accounting and management or mathematics and science.

Types of Jobs: Computer operator, computer programmer, junior systems' analyst, sales representatives, related technician.

Job Opportunities: Unlimited with excellent starting salaries and growth potential for managerial position. Opportunity for continuing education toward Bachelor Degree.

FIRST SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CS 18	Fundamentals of Computer Science	3	3	0	48
CS 19	Compiler Language I - Fortran	3	3	0	48
BA 12	Accounting I	3	3	0	48
ENG 11	Language and Composition I	3	3	1	64
*MAT 100	Fundamentals of Mathematics I	3	3	0	48
***PE	Physical Education	1	0	2	32
		16	15	3	304

SECOND SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CS 20	Support Systems	3	3	0	48
CS 27	Assembler Language I	4	4	0	64
ENG 12	Language and Composition II	3	3	1	64
MAT 200	Fundamentals of Mathematics II	3	3	0	48
**Business or Math/Science Elective		3-4	3-4	0-3	48-96
***PE	Physical Education	1	0	2	32
		17-18	16-17	3-6	304-352

THIRD SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CS 33	Systems Development and Applications I	3	3	0	48
CS 35	Compiler Language II - COBOL	4	4	0	64
CS 37	Assembler Language II	4	4	0	64
MAT 201 or MAT 203	Statistical Analysis I or Elementary Statistics	3	3	0	48
**Business or Math/Science Elective		3-4	3-4	0-3	48-96
		17-18	17-18	0-3	272-320

FOURTH SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CS 41	Data Management	3	3	0	48
CS 42	Numerical Programming Methods	3	3	0	48
CS 43	Systems Development and Applications II	3	3	0	48
**Business or Math/Science Elective		3-4	3-4	0-3	48-96
****Elective (General Studies)		3-4	3-4	0	48-64
		15-17	15-17	0-3	240-304

*MAT 100 is the minimum required level of mathematics. Students who qualify may select an advanced math course or follow the Liberal Art's advanced mathematics sequence. Students with a weak math background may select a non-credit developmental math course.

**Students will elect business or math/science courses as a minor area of study. See your advisor for the approved list of courses.

***Males: PE 105, 106, 107, 108.
Females: PE 115, 116, 117, 118.

****Elective (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Entrance requirement: High school graduate or equivalent with 2 units of mathematics including algebra.

COURSE DESCRIPTIONS / *computer science department*

CSC 101 INTRODUCTION TO COMPUTER SCIENCE

Concepts of data processing systems, methods and applications; programming languages and program structures; FORTRAN IV programming language; problem analysis, flowcharting and computer solution of numerical and non-numerical problems. 3 Cr. (3-0).

CS 03 INTRODUCTION TO DATA PROCESSING

Study of data processing systems and methods and applications; punch card equipment, records and files; concepts of computer systems; data representation, forms of input and output; introduction to programming, operating and data communication systems; application exercises. 3 Cr. (3-0).

CS 04 TECHNICAL COMPUTER PROGRAMMING

Study of the Fortran language and programming as applied to technical applications; basic concepts of computer systems and applications; problem analysis, flowcharting and problem solving. 3 Cr. (3-0).
Prerequisite: Algebra.

CS 05 BUSINESS COMPUTER PROGRAMMING

Basic logic and problem organization for data processing applications; general introduction to programming concepts; RPG language and applications; basic software packages; introduction to COBOL. 3 Cr. (3-0).
Prerequisite: CS 03.

CS 18 FUNDAMENTALS OF COMPUTER SCIENCE

Basics of data processing and problem solving techniques; types of data processing systems, punch card equipment, records and files; concepts of computer systems; logic and problem solving techniques, flow charts, algorithms; data representation and file organization; introduction to programming languages; operating procedures with "hands-on" experience. 3 Cr. (3-0).

CS 19 COMPILER LANGUAGE I — FORTRAN

Fortran IV language programming as applied to business and mathematics problems; problem analysis, programming techniques and procedures; utilization of magnetic tape and disc. 3 Cr. (3-0).

CS 20 SUPPORT SYSTEMS

Advanced study of computer concepts and software; computer operating systems and job control techniques with "hands-on" practice; utilities and program libraries; RPG language and applications; introduction to COBOL programming language. 3 Cr. (3-0).
Prerequisite: CS 18.

CS 27 ASSEMBLER LANGUAGE I

Beginning course in Basic Assembler Language, data representation, instructions, coding; problem analysis, flowcharting; program writing, execution, debugging and documentation; job control and operation systems. 4 Cr. (4-0).
Prerequisites: CS 18 and CS 19 (or permission of department).

CS 30 INTERNSHIP IN COMPUTER SYSTEMS

Supervised individual research projects or assignment to an industrial data processing site for on-the-job training. 3 Cr. (0-9).
Prerequisite: Two semesters of Computer Science.

CS 33 SYSTEMS DEVELOPMENT AND APPLICATIONS I

Analysis and design of data processing systems; system investigation; input, output designs; record and file designs; information structures; problem definition, documentation, coding approaches; independent development of an assigned system problem by the student. 3 Cr. (3-0).
Prerequisite: CS 20 and CS 27.

CS 35 COMPILER LANGUAGE II — COBOL

Study and programming in the COBOL computer language; language elements and divisions; program writing, execution, and diagnostics; advanced programming concepts and techniques. 4 Cr. (4-0).
Prerequisite: CS 20.

CS 37 ASSEMBLER LANGUAGE II

Continuation and expansion of CS 27; data manipulation; tape, disc and floating point operations; macro definitions and statements; analyzing and programming problems from business and scientific applications. 4 Cr. (4-0).
Prerequisite: CS 27.

CS 41 DATA MANAGEMENT

In-depth study of the structure and techniques of data representation and manipulation; sequential and random organization; list structures, complex structures; symbol tables, searching and sorting techniques; information structures, data communications. 3 Cr. (3-0).
Prerequisites: CS 27 and CS 35.

CS 42 NUMERICAL PROGRAMMING METHODS

Basic concepts of the methods used in the numerical solution of problems, approximations, series expansions, difference tables; linear programming, simplex method; study and use of digital plotters. 3 Cr. (3-0).
Prerequisites: CS 19, MAT 104 and MAT 203.

CS 43 SYSTEMS DEVELOPMENT AND APPLICATIONS II

Independent development of an assigned systems problem and/or continuation of problem assigned in CS 33; design criteria, logic diagrams and coding; manual and operating procedures and manuals; proving the system; feedback and evaluation. 3 Cr. (3-0).
Prerequisites: CS 33 and CS 35.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

DRAFTING DEPARTMENT / Career Programs

FRED R. JONES, Chairman

Associate Degree

AT Architectural Technology
CT Civil Engineering Technology
ED Engineering Drafting Technology
TD Tool Design Technology
TI Technical Illustration

Certificate

MD Mechanical Drafting

ARCHITECTURAL TECHNOLOGY (AT)

Associate Degree / Two Years

The Architectural Technology Program will prepare you for a position in an architectural or engineering office. You will learn drafting principles and practices through residential and commercial working drawings, first and second year design fundamentals, structural calculations and site planning.

Types of Jobs: Private practice, employment in corporation departments and public bureaus, construction business, landscape architecture firms, and engineering fields.

Job Opportunities: Good with excellent starting salaries and advancements.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AT	11	Statics	3	3	0	48
AT	21	Fundamentals of Architectural Graphics	4	2	6	128
AT	31	History of Architecture	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			17	15	10	400

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AT	12	Structures I	2	2	0	32
AT	22	Architectural Graphics	3	1	6	112
AT	23	Architectural Working Drawings	4	1	9	160
AT	41	Building Materials and Methods I	2	2	0	32
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
			17	13	17	480

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AT	13	Structures II	2	2	0	32
AT	42	Building Materials and Methods II	3	3	0	48
AT	51	Building Equipment I	3	3	0	48
AT	61	Design I	4	2	6	128
AT	62	Site Planning	3	2	3	80
AT	71	Seminar I	1	1	0	16
*PE		Physical Education	1	0	2	32
			17	13	11	384

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
AT	14	Structures III	2	2	0	32
AT	52	Building Equipment II	3	3	0	48
AT	63	Design II	6	3	9	192
AT	72	Professional Administration and Contract Documents	2	2	0	32
AT	73	Seminar II	1	1	0	16
ECO	11	Basic Economics	3	3	0	48
			17	14	9	368

Electives: AT 64 Advanced Design I; AT 65 Advanced Design II. (For students entering with advanced placement.)

*Males: PE 105, 106, 107, 108.
Females: PE 115, 116, 117, 118.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Recommended high school subjects: Algebra and geometry; one year of science.

CIVIL ENGINEERING TECHNOLOGY (CT)

Associate Degree / Two Years

An Associate Degree in Civil Engineering Technology will prepare you to assist civil engineers in the planning, designing and construction of highways, railroads, bridges, airfields, dams, and buildings. You will study such areas of civil engineering as surveying, cartography, photogrammetry, highway engineering, and structural design. Experience with modern equipment will prepare you to meet current industrial demands.

Types of Jobs: Engineering technician, surveyor, inspector, draftsman, cartographer, design technician, and photogrammetrist.

Job Opportunities: Unlimited with excellent starting salaries and opportunities for advancements and further industry-financed education.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CT	01	Introduction to Engineering Technology	1	1	0	16
CT	02	Topographic Drawing	3	1	6	112
CT	05	Materials of Construction	2	2	0	32
CT	10	Introductory Surveying	2	1	3	64
ED	01	Mechanical Drawing	2	1	3	64
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			17	13	16	464

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CT	20	Plane Surveying	4	1	9	160
CT	22	Cartography	3	1	6	112
ECO	11	Basic Economics	3	3	0	48
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
*PE		Physical Education	1	0	2	32
			17	12	19	496

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CT	30	Route Surveying	4	1	9	160
CT	33	Highway Engineering Tech.	4	3	3	96
CT	34	Statics	3	3	1	64
PHY	21	Physics-Mechanics	4	3	3	96
GEL	105	Physical Geology	4	3	3	96
			19	13	16	512

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CT	40	Advanced Surveying	3	2	3	80
CT	45	Engineering Technology	3	2	3	80
CT	46	Photogrammetry	3	2	3	80
CS	04	Technical Computer Programming	3	3	0	48
**Elective			3	3	0-1	48-64
			15	12	9-10	336-352

*Males: PE 105, 106, 107. 108.
Females: PE 115, 116, 117, 118.

**Electives: CT 44 Strength of Materials; GEO 101 - Physical Geography; MAT 112 - Calculus I.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Recommended high school subjects: Algebra and geometry; one year of science.

ENGINEERING DRAFTING TECHNOLOGY (ED)

Associate Degree / Two Years

This program will give you a broad knowledge of mechanical drafting and engineering procedures and will provide you with the necessary background in mathematics, science and communications skills to work as a technician or engineering aide. As a graduate of this program you will be prepared to make a variety of engineering drawings and calculations.

Types of Jobs: Mechanical detail and layout draftsman, engineering assistant or aide, checker, field department supervisor, or jobs in related areas such as planning, traffic safety, maintenance and purchasing.

Job Opportunities: Unlimited in many industries with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED 10	Basic Drafting I (Eight Weeks)	4	4	12	128
ED 11	Basic Drafting II (Eight Weeks)	4	4	12	128
ED 12	Industrial Processes	2	2	1	48
ENG 11	Language and Composition I	3	3	1	64
MAT 103	College Algebra	3	4	1	80
*PE	Physical Education	1	0	2	32
		17	13	17	480

SECOND SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED 20	Power Transmission (Eight Weeks)	4	4	12	128
ED 21	Mechanisms (Eight Weeks)	4	4	12	128
ENG 12	Language and Composition II	3	3	1	64
MAT 104	Trigonometry	3	4	1	80
**Elective	(General Studies)	3-4	3-4	0	48-64
*PE	Physical Education	1	0	2	32
		18-19	14-15	16	480-496

THIRD SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED 30	Detail and Assembly Drawings (Eight Weeks)	4	4	12	128
ED 31	Applied Drafting Techniques (Eight Weeks)	4	4	12	128
ECO 11	Basic Economics	3	3	0	48
PHY 21	Physics-Mechanics	4	3	3	96
**Elective	(General Studies)	3-4	3-4	0	48-64
		18-19	13-14	15	448-464

FOURTH SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED 40	Advanced Detail I (Eight Weeks)	4	4	12	128
ED 41	Advanced Detail II (Eight Weeks)	4	4	12	128
PHY 33	Physics-Heat and Light	4	4	3	96
***Elective		3-4	1-5	0-6	48-96
		15-16	8-12	15-21	400-448

*Males: PE 105, 106, 107, 108.
Females: PE 115, 116, 117, 118.

**Elective (General Studies): See page 76 for the applicable list of electives.

***Electives: ED 51; MAT 112; PHY 22; PHY 31; and TD 21.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Recommended high school subjects: Algebra and geometry; one year of science.

TOOL DESIGN TECHNOLOGY (TD)

Associate Degree / Two Years

In Tool Design Technology you will specialize in planning and making drawings of special mechanical devices (cutting tools, gages, dies, jigs, fixtures) ranging from simple hand tools to complex progressive dies. You will learn drafting and tool production practices, and you will produce tool drawings. You will be taught how to write programs for production jobs on tape-controlled machines.

Types of Jobs: Tool, machine, and product designer; numerical programmer, design draftsman, estimator, and systems program designer.

Job Opportunities: Unlimited in many industries with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED	10	Basic Drafting I (Eight Weeks)	4	4	12	128
ED	11	Basic Drafting II (Eight Weeks)	4	4	12	128
ED	12	Industrial Processes	2	2	1	48
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			17	13	17	464

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED	20	Power Transmission (Eight Weeks)	4	4	12	128
TD	21	Tool Drafting (Eight Weeks)	4	4	12	128
TT	04	Elementary Machine Shop I	3	2	4	96
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
*PE		Physical Education	1	0	2	32
			18	13	20	528

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
TD	30	Cutting-Tool Design (Eight Weeks)	4	4	12	128
TD	31	Fixture Design (Eight Weeks)	4	4	12	128
TT	05	Elementary Machine Shop II	3	2	4	96
PHY	21	Physics-Mechanics	4	4	3	96
**Elective (General Studies)			3-4	3-4	0	48-64
			18-19	12-13	19	496-512

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
TD	40	Gage Design and Programming (Eight Weeks)	4	4	12	128
TD	41	Die Design (Eight Weeks)	4	4	12	128
TT	06	Elementary Machine Shop III	3	2	4	96
ECO	11	Basic Economics	3	3	0	48
PHY	22	Introduction to Metallurgy	4	4	0	64
			18	13	16	464

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Elective (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Recommended high school subjects: Algebra and geometry; one year of science.

TECHNICAL ILLUSTRATION (TI)

Associate Degree / Two Years

This program will enable you to work with engineering draftsmen or technical writers. Your job will be to interpret engineering drawings into three-dimensional illustrations. The courses leading to an Associate Degree in Technical Illustration will give you not only the drawing skills necessary for this work but also the broad background in science, mathematics, and communications helpful for advancement in industry.

Types of Jobs: Technical illustrator for industry, either in an engineering department or in a publications department; in the engineering field you would produce clear, accurate pictures drawn from blueprints for engineers; illustrations for company literature: parts and sales catalogs, maintenance, repair, and assembly manuals, charts, and handbooks.

Job Opportunities: Technical illustration has advanced rapidly in industry in the last few years, and the demand for qualified people far exceeds the supply. Starting salaries are excellent.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED	10	Basic Drafting I (Eight Weeks)	4	4	12	128
ED	11	Basic Drafting II (Eight Weeks)	4	4	12	128
ED	12	Industrial Processes	2	2	1	48
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			17	13	17	480

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
GA	10	Reproduction Processes I	1	1	1	32
ED	03	Gears and Cams	2	1	3	64
TI	21	Perspective Drawing	4	3	5	128
TI	23	Rendering I	4	3	5	128
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
			17	15	16	496

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
GA	30	Reproduction Processes III	1	1	1	32
TI	31	Axonometric Drawing	4	3	5	128
TI	33	Color	2	1	3	64
TI	34	Rendering II	4	3	5	128
PHY	21	Physics-Mechanics	4	3	3	96
*PE		Physical Education	1	0	2	32
			16	11	19	480

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
TI	40	Illustration Practice	4	3	5	128
TI	41	Technical Drawing	4	3	5	128
TI	42	Layout and Design	2	1	3	64
ECO	11	Basic Economics	3	3	0	48
**Elective (General Studies)			3-4	3-4	0	48-64
			16-17	13-14	13	416-432

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Elective (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Recommended high school subjects: Algebra and geometry; one year of science.

MECHANICAL DRAFTING (MD)

Certificate / Two Years

In the Mechanical Drafting Program emphasis is placed upon drafting skills which will enable you to produce drawings for modern industry. You will learn the latest industrial processes which will improve and enhance your drawings and insure your efficiency.

Types of Jobs: Mechanical, sheet metal, electrical, or piping draftsman; related jobs such as estimator or field erection supervisor.

Job Opportunities: Unlimited with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED 12	Industrial Processes	2.0	2	1	48
MD 12	Drafting I (Eight Weeks)	4.5	1	24	200
MD 14	Drafting II (Eight Weeks)	4.5	1	24	200
MAT 10	General Mathematics	3.0	3	0	48
		14.0	6	25	496

SECOND SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
MD 22	Drafting III (Eight Weeks)	4.5	1	24	200
MD 24	Drafting IV (Eight Weeks)	4.5	1	24	200
ENG 03	Communications I	3.0	3	1	64
MAT 20	Algebra	3.0	3	0	48
		15.0	7	25	512

THIRD SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
MD 32	Drafting V (Eight Weeks)	4.5	1	24	200
MD 34	Drafting VI (Eight Weeks)	4.5	1	24	200
ENG 04	Communications II	3.0	3	1	64
**Elective		3.0	3	0	48
		15.0	7	25	512

FOURTH SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
MD 42	Drafting VII (Eight Weeks)	4.5	1	24	200
MD 44	Drafting VIII (Eight Weeks)	4.5	1	24	200
ECO 02	Fundamentals of Economics				
or					
ECO 11	Basic Economics	3.0	3	0	48
PHY 20	Physics Survey	3.0	3	0	48
		15.0	7	24	496

**Electives: BM 47 Small Business Management; CHE 100 - Introduction to Chemistry; MAT 03 Basic Geometry.

NOTE: Students with advanced standing for MD 12 and 14 will take MD 22 and 24 the first semester, MD 32 and 34 the second semester, MD 42 and 44 the third semester, and MD 55 the fourth semester.

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *drafting department*

AT 11 STATICS

Algebraic and graphic determination of loads, reactions, shear and moment, deflection, loading and buckling, truss design, properties of areas. 3 Cr. (3-0).

AT 12 STRUCTURES I

Theory and design of wood and timber; identification, characteristics and classifications of wood; working stresses; design and beams, columns, joints, rafters, plank, laminated sections; timber connections, fastenings and their working properties; laminated lumber, shapes. 2 Cr. (2-0).

AT 13 STRUCTURES II

Theory and design of steel beams, columns, and connections (welded, bolted and riveted) for moment, shear, slope, deflections, axial and eccentric loads; the AISC Handbook; bearing capacity of masonry walls, design of bearing plates, steel joists, space frames and trusses. 2 Cr. (2-0).

AT 14 STRUCTURES III

Reinforced concrete building; theory and design of slabs, beams, compression steel, columns, prestressed concrete, footings, walls; floors; quantitative study of structural forms from the view of material development. 2 Cr. (2-0).

AT 21 FUNDAMENTALS OF ARCHITECTURAL GRAPHICS

Basic architectural graphic media; projection drawings; axonometrics and perspective; color and texture; introduction to the architectural model; basic vocabulary of architectural drawings: composition, space, form, value, texture, shades, shadows. 4 Cr. (2-6).

AT 22 ARCHITECTURAL GRAPHICS

Architectural rendering in various media; black and white, color problems; emphasis on development of techniques, style, presentation. 3 Cr. (1-6).

AT 23 ARCHITECTURAL WORKING DRAWINGS

Laboratory practice in producing a complete set of architectural working drawings; emphasis on preparation, technique, content, thoroughness, continuity, lettering, presentation quality. 4 Cr. (1-9).

AT 25 BASIC ARCHITECTURAL DRAFTING

Fundamentals of architectural drawing for woodworking technology; use and care of drawing instruments and media, lettering, orthographic projection principles, preliminary drawing and sketching, preparation of working drawings, exterior and interior finish work, detailing cabinet and mill work. 3 Ut. (1-6), 112 Hrs.

AT 31 HISTORY OF ARCHITECTURE

Developmental survey of architecture and related fine arts from ancient times to the present; emphasis on development of site planning, form, space, methods of construction, materials in relation to man and his needs. 3 Cr. (3-0).

AT 41 BUILDING MATERIALS AND METHODS I

Study of typical materials of residential construction: their production, properties, use, performance in combinations. 2 Cr. (2-0).

AT 42 BUILDING MATERIALS AND METHODS II

Subsurface exploration and foundations, water and dampproofing; methods and materials for construction of masonry, concrete walls, slabs; wall, floor, and roof systems; the curtain wall; fireproofing; building codes; architectural hardware. 3 Cr. (3-0).

AT 51 BUILDING EQUIPMENT I

Theory and design of plumbing, heating, air-conditioning, and control systems; sources and design of water supply; sanitary and storm systems; computation of plumbing, heating and cooling loads. 3 Cr. (3-0).

AT 52 BUILDING EQUIPMENT II

Theory and design of electrical service distribution systems; selection of electrical equipment, fixtures; electrical heating design; theory and measurement of light, sound; vertical transportation systems; sound systems. 3 Cr. (3-0).

AT 61 DESIGN I

Fundamental relationships of function, space, time, light, needs of man; introduction to the design process; collaborative work; emphasis on methods of work; presentation of architectural ideas by preliminary drawings; working drawings; models. 4 Cr. (2-6).

AT 62 SITE PLANNING

Theories, methods and equipment for the measurement of distances, angles, differences in elevation; theory of error; computations; adjustment of data; mapping application of surveying methods to construction, boundaries; emphasis on production and interpretation of maps for selection of sites, planning of subdivisions, preparation of master plans; examination of sites for buildings; elements of architectural earth sculpture, water, subsurface conditions, landscaping. 3 Cr. (2-3).

AT 63 DESIGN II

Problems of differential space organizations; specialized spacial forms; relationship of space, form, structure, equipment, light; applications of elements of detailing; design of load bearing and curtain walls relating to total design; problems of tall buildings, building groups, associated site planning; architectural character and aesthetics; correlation of design with associated methods of construction; analysis, development of programs, collaborative work; advanced problems of form, visual expression; emphasis on methods of work; presentation of architectural ideas by preliminary drawings; working drawings; models. 6 Cr. (3-9).

AT 64 ADVANCED DESIGN I

Continuation of the design process; individual projects to develop student's ability to coordinate the design concept with construction. 4 Cr. (1-9).

AT 65 ADVANCED DESIGN II

Continuation of AT 64. 4 Cr. (1-9).

AT 71 SEMINAR I

Study of architectural ideas, theories, current problems; nature of architect as leader; human activity; relation to man's physical, social, intellectual and spiritual nature; influence of tradition, science, technology. 1 Cr. (1-0).

AT 72 PROFESSIONAL ADMINISTRATION AND CONTRACT DOCUMENTS

Architectural registration, professional organization, ethics; forms of architectural service; contract law; bonds; liens; codes; insurance; bidding procedures; specification writing; supervision and administration of construction operation. 2 Cr. (2-0).

AT 73 SEMINAR II

Continuation of AT 71. 1 Cr. (1-0).

CT 01 INTRODUCTION TO ENGINEERING TECHNOLOGY

Introduction to all functions and branches of engineering

through general lectures. Development of course outlines and library practice will comprise the homework. 1 Cr. (1-0).

CT 02 TOPOGRAPHIC DRAWING

Use of conventional signs in mapping; logical contouring; methods of plotting; construction of large scale topographic maps; enlargement and reduction of maps and plans; plans and profiles; photographic interpretation; determination of areas. 3 Cr. (1-6).
Corequisite: CT 10.

CT 05 MATERIALS OF CONSTRUCTION

Properties of concrete, aggregates, asphalt, steel, wood, plastics, clay products and miscellaneous construction materials; methods of testing and sampling construction materials; application of data on materials to design of structure. 2 Cr. (2-0).

CT 10 INTRODUCTORY SURVEYING

Introduction to surveying; use and care of instruments; simple surveys with compass, transit, level, and tape. 2 Cr. (1-3).
Prerequisites: High school trigonometry, algebra, and geometry.

CT 20 PLANE SURVEYING

Theory and practice of plane surveying; traverses and elementary triangulation; differential and reciprocal leveling; stadia and construction surveys; plane table surveys. 4 Cr. (1-9).
Prerequisites: CT 10; MAT 103 (with grade of C or better).
Corequisite: MAT 104

CT 22 CARTOGRAPHY

Use and construction of small scale maps; earth's coordinate system; map projections; scribing techniques; photographic color separation; typography; reproduction and processing. 3 Cr. (1-6).
Prerequisite: CT 02.

CT 30 ROUTE SURVEYING

Highway curves (horizontal and vertical); plus and offset; X-sections; field astronomy; route location. 4 Cr. (1-9).
Prerequisites: CT 20; MAT 104 (with grade of C or better).

CT 33 HIGHWAY ENGINEERING TECHNOLOGY

Highway economy; highway characteristics; highway design; drainage and structures; super-elevation; roadway construction; pavements; hydrology (precipitation and runoff); mass diagram; contracts and specifications. 4 Cr. (3-3).
Corequisite: CT 30.

CT 34 STATICS

Basic principles of statics; coplanar and non-coplanar force systems; friction; centroids and moments of inertia; hydrostatic pressures and loads. 3 Cr. (3-1).
Prerequisite: MAT 104 (with grade of C or better).

CT 40 ADVANCED SURVEYING

Theory and practice of boundary surveys; city surveys; mine surveys; hydrographic surveys and steam gaging; bridge surveys; survey control, and state coordinate systems; public land surveys; precise leveling and triangulation. 3 Cr. (2-3).
Prerequisite: CT 30.

CT 44 STRENGTH OF MATERIALS

Engineering materials and properties; shear and moments in beams; stresses in beams; design of beams; deflection of beams; columns. 3 Cr. (3-1).
Prerequisite: CT 34.

CT 45 ENGINEERING TECHNOLOGY

Traffic engineering technology; sub-division design; land planning. 3 Cr. (2-3).
Prerequisite: CT 33.

CT 46 PHOTOGRAMMETRY

Use and application of aerial photographs; mapping by photogrammetric methods; geometry of aerial photographs; aerial triangulation; flight planning; mosaics; contracts and specifications. 3 Cr. (2-3).
Prerequisites: CT 22; MAT 104 (with grade of C or better).

ED 01 MECHANICAL DRAWING

This course is offered to those students who are enrolled in curricula other than drafting. Use of drawing instruments, lettering, geometric construction, orthographic projection, technical sketching, isometric and oblique sketches, dimen-

sioning, sections, auxiliary views, threads and fasteners, working drawings, and blueprint reading. 2 Cr. (1-3).

ED 02 ENGINEERING DRAFTING

Practical application of drafting to the electrical construction field for both domestic and commercial use; house diagrams with circuit schematics, wiring diagrams and complete bill of material and layout diagrams for public facilities such as the lighting system for a small community. 2 Cr. (1-3).

ED 03 GEARS AND CAMS

A study of motion transfer through the use of gears and cams. 2 Cr. (1-3).

ED 04 AIRCRAFT DRAWINGS

A study of aircraft blueprint reading for aviation maintenance technicians with emphasis on the reading and interpretation of multiview drawings including installation diagrams, schematics, the use of charts and graphs. The student will also learn to make three dimensional sketches for repair and alterations to aircraft. 2 Ut. (1-3), 64 Hrs.

ED 05 BLUEPRINT READING

A study of blueprint reading for welders with emphasis on the reading and interpretation of multiview drawings involving dimensions, notes specifications and welding symbols. 1 Ut. (1-2), 48 Hrs.

ED 10 BASIC DRAFTING I

Use of drawing instruments, lettering, geometric construction, orthographic projection, isometric drawings, sectioning, dimensioning, auxiliary views, revolutions and freehand sketching. 4 Cr. (4-12).

ED 11 BASIC DRAFTING II

Inclusion of screwthreads and fastening devices, working, assembly and installation drawings; study of sheet metal intersections and developments. 4 Cr. (4-12).
Prerequisite: ED 10.

ED 12 INDUSTRIAL PROCESSES

Theories and applications in the principal metal removal, forming, joining and casting processes. 2 Cr. (2-1), 48 Hrs.

ED 20 POWER TRANSMISSION

A study of power and motion transfer through the use of gears and cams and other devices. 4 Cr. (4-12).

ED 21 MECHANISMS

A study of power and motion transfer through the use of various linkages and mechanisms. 4 Cr. (4-12).

ED 22 DRAFTING AND SKETCHING

A study of drafting and freehand sketching with emphasis on sketching for those who major in the Industrial Management Program. This course includes: geometrical construction, shape description, screwthreads and other fastening devices, working drawings, assembly drawings, gears, cams, and interpreting actual plant layouts and production line drawings related to the installation and operation of equipment. 3 Cr. (2-4).

ED 30 DETAIL AND ASSEMBLY DRAWINGS

Accurate working drawings, sub-assemblies and assemblies; drawing details from sketches and other engineering specifications. 4 Cr. (4-12).
Prerequisite: ED 11.

ED 31 APPLIED DRAFTING TECHNIQUES

Complicated detail drawings from industrial castings; comprehensive study of close tolerance dimensioning. 4 Cr. (4-12).
Prerequisite: ED 30.

ED 40 ADVANCED DETAIL I

Redesigning of industrial castings into weldments; detail drawings from engineering layouts; comprehensive study of welding, piping and layouts. 4 Cr. (4-12).

ED 41 ADVANCED DETAIL II

Advanced study and application of drafting using layouts from industry to make detail, assembly and sub-assembly drawings; included are geometric tolerancing, true position dimensioning and surface finish specifications in accordance with industrial and military standards. 4 Cr. (4-12).
Prerequisite: ED 31.

ED 51 DESCRIPTIVE GEOMETRY

Principles of orthographic projection; fundamental problems involving the relationship of points, lines and planes in space; intersecting lines and planes; graphical computations for bearings and slopes of lines, strike and dip of planes; solution of problems of intersection of planes and solids. 3 Cr. (1-6).
Prerequisite: High school background in drafting.

MD 12 DRAFTING I

Mechanical drawing; lettering; geometric drawing; orthographic projection; pictorial projections; sectioning; dimensioning; auxiliary views; revolutions; free-hand sketching; reproduction processes. 4.5 Ut. (1-24), 200 Hrs.

MD 14 DRAFTING II

Threads, fasteners, springs; working drawings; assembly, detail and installation drawings. 4.5 Ut. (1-24), 200 Hrs.
Prerequisite: MD 12.

MD 22 DRAFTING III

Study of sheet metal intersections and developments, cones, transition pieces, irregular shapes; introduction to making accurate detail drawings from industrial machines parts.
4.5 Ut. (1-24), 200 Hrs.
Prerequisite: MD 14.

MD 24 DRAFTING IV

Accurate detail drawings from complicated industrial machine parts, conforming to industrial and military standards; comprehensive study of close tolerance dimensioning.
4.5 Ut. (1-24), 200 Hrs.
Prerequisite: MD 22.

MD 32 DRAFTING V

Study of power transmissions, pulleys, sheaves, gears, sprockets. 4.5 Ut. (1-24), 200 Hrs.
Prerequisite: MD 24.

MD 34 DRAFTING VI

Study of the mechanisms used to create motion in machines cams, linkages. 4.5 Ut. (1-24), 200 Hrs.
Prerequisite: MD 32.

MD 42 DRAFTING VII

Redesigning of industrial castings into weldments; detail drawings, from engineering layouts; comprehensive study of welding, piping and layout drawings. 4.5 Ut. (1-24), 200 Hrs.

MD 44 DRAFTING VIII

Advanced study of drafting applications using industrial layouts to make detail, assembly, sub-assembly drawings; geometric tolerancing; true position dimensioning; surface finish specifications in accordance with industrial and military standards. 4.5 Ut. (1-24), 200 Hrs.

MD 55 DRAFTING IX

Simple machine layout; completion of the necessary drawings according to industrial practices. 5 Ut. (1-12), 208 Hrs.
Prerequisite: Approval of Department Chairman.
NOTE: Courses to be taken in sequence as listed unless approval is granted by the Department Chairman.

TD 21 TOOL DRAFTING

Transition between drafting and tool design; drawings, techniques; purchased parts; standards of shop drawings; material lists; selection of materials and heat treating of metals. 4 Cr. (4-12).
Prerequisite: ED 11.

TD 30 CUTTING – TOOL DESIGN

Design of single-edge cutting tools, boring bars and multiple-edge cutting tools. 4 Cr. (4-12).

TD 31 FIXTURE DESIGN

Design of leaf and tumble jugs, plain and index milling fixtures, vise jaws, chuck jaws, lathe fixtures, and adaptor plates. 4 Cr. (4-12).

TD 40 GAGE DESIGN AND PROGRAMMING

Writing of programs for point to point and contouring tape controlled machines; design of plug, snap, ring, flush pin depth, length and indicating gages. 4 Cr. (4-12).
Prerequisite: ED 11.

TD 41 DIE DESIGN

Designing of cutting, forming, drawing, and cavity dies; simple progressive and compound arrangements. 4 Cr. (4-12).

TI 21 PERSPECTIVE DRAWING

Instruction in one-point or parallel perspective, two-point or angular perspective; projection method and measuring plan emphasized. 4 Cr. (3-5).

TI 23 RENDERING I

Shading of illustrations using various water base pigments to produce wash and opaque illustrations of geometric constructions. 4 Cr. (3-5).

TI 31 AXONOMETRIC DRAWING

Instruction in isometric, dimetric and trimetric projections; instruction in use of popular industrial drawings aids. 4 Cr. (3-5).

TI 33 COLOR

Color theory and training in the use and application of color; full color rendering of products; use of flat colors and color aids. 2 Cr. (1-3).

TI 34 RENDERING II

Continuation of Rendering I; fundamental training and skills required to produce continuous tone drawings with airbrush. 4 Cr. (3-5).

TI 40 ILLUSTRATION PRACTICE

Training in rendering art for technical manuals and related art, combinations for rendering learned techniques, preparation of presentation folio. 4 Cr. (3-5).

TI 41 TECHNICAL DRAWING

Continuation of perspective and axonometric drawing course; production of illustration to meet employment requirements including assembly, exploded and cut-away views of mechanical objects. 4 Cr. (3-5).

TI 42 LAYOUT AND DESIGN

Basic fundamentals of layout; creation of sketches, designs, thumbnail sketches, comprehensives, with emphasis on technique, structure, mechanics, awareness, and communication. 2 Cr. (1-3).

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

EARTH SCIENCE DEPARTMENT / Career Programs

JOSEPH G. SICK, Chairman

Associate Degree

FL Floriculture
FR Forest Technology
NM Nursery Management

Certificate

SO Service and Operation of Heavy Construction Equipment

ORNAMENTAL HORTICULTURE TECHNOLOGY
FLORICULTURE (FL)

Associate Degree / Two Years

The production of flowers - indoors and out - and plants for decorative purposes, consequent grading, arranging. distributing and marketing are included in this program. The study of soils, plant propagation and pathology, woody and herbaceous plants, greenhouse crop production and horticulture mechanics are stressed. Floral design and flower shop operation as well as business psychology, marketing and economics are covered. Other courses directly related to Floriculture and others necessary to provide you with a good general education make this program an effective one. The purpose of this program is to prepare you for multiple responsibility occupations which require an understanding of flower culture and merchandising.

Types of Jobs: Flower propagation; flower sales, both retail and wholesale; flower shop management. assisting in plant pathology; own business.

Job Opportunities: Good to very good: the on-going popularity of cut flowers and potted plants will keep job opportunities ever available in this field.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BIO	03	Botany (Horticulture)	3	2	3	80
ENG	11	Language and Composition I	3	3	1	64
MAT	11	Basic Algebra	3	3	0	48
OH	10	Introduction to Horticulture	1	1	0	16
OH	11	Horticulture Soils	3	2	3	80
OH	12	Woody Plants I	2	1	3	64
*PE		Physical Education	1	0	2	32
			16	12	12	384

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CHE	101	General Chemistry I	4	3	3	96
ENG	12	Language and Composition II	3	3	1	64
OH	20	Greenhouse Crop Production I	3	2	3	80
OH	24	Plant Propagation	3	2	3	80
OH	25	Plant Pests	3	2	3	80
			16	12	13	400

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
OH	30	Floral Design	3	1	6	112
OH	31	Greenhouse Crop Production II	3	2	3	80
OH	33	House and Conservatory Plants	3	2	3	80
OH	34	Plant Diseases	3	2	3	80
**Elective			3	3	0	48
*PE		Physical Education	1	0	2	32
			16	10	17	432

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
OH	40	Flower Shop Operation	4	3	3	96
OH	41	Greenhouse Crop Production III	3	2	3	80
OH	44	Salesmanship and Sales Practice	3	2	3	80
OH	46	Horticulture Mechanics	3	2	3	80
**Elective			3	3	0	48
			16	12	12	384

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Electives: BM 36 - Marketing; SOC 101 - Introduction to Sociology; BA 11 - Accounting; ECO 11 - Principles of Economics

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

FOREST TECHNOLOGY (FR)

Associate Degree / Two Years

Forest Technology is a two-year program of study in the applied phases of forestry. It includes sufficient general academic courses and specialized forestry courses to prepare the student to occupy a responsible position between the skilled forest worker and the professional forestor. Basic forestry techniques and activities are taught the first year and the second year of work builds directly on this background. Field work is an important part of the course of instruction.

Types of Jobs: In public agencies: forest fire control; wildlife habitat improvement; maintenance of forest roads, structures and recreation areas; timber estimation; timber marking; and stand improvement. In private employment; pulpwood or sanitimber procurement, timber estimation, planning and construction of forest roads, supervision of logging operations, and location and survey of forest property lines.

Job Opportunities: Most public forestry agencies now include positions for technicians and your background of forest land management and use will provide you not only with employment opportunities but also opportunity for advancement.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
FR	10	Introduction to Forestry	1	1	0	16
FR	11	Dendrology	3	2	3	80
FR	13	Forest Mensuration	3	2	3	80
FR	14	Forest Botany	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			17	15	10	400

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
FR	21	Photogrammetry and Forest Surveying I	3	1	6	112
FR	25	Forest Ecology	3	2	3	80
FR	28	Advanced Forest Mensuration	3	2	3	80
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
*PE		Physical Education	1	0	2	32
			16	12	16	448

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM	13	Principles of Business	3	3	0	48
FR	32	Forest Surveying II	3	2	3	80
FR	33	Equipment and Machinery	3	2	3	80
FR	36	Timber Harvesting	3	2	3	80
FR	38	Forest Protection	3	3	0	48
FR	46	Silviculture	3	2	3	80
			18	14	12	416

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
FR	31	Wildlife Management	3	2	3	80
FR	42	Forest Products	3	2	3	80
FR	44	Forest Land Management	3	2	3	80
FR	45	Forest and Recreation Improvements	3	2	3	80
ECO	11	Basic Economics	3	3	0	48
**Elective			3	3	0	48
			18	14	12	416

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Electives: SOC 101 - Introduction to Sociology; ENG 211 - Fundamentals of Speech; GEO 101 - Physical Geography; GOV 201 - American Government - National; PSY 101 - General Psychology; BM 31 - Business Law; CS 04 - Technical Computer Programming.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with concurrence of the Deans.

Required high school subjects: Algebra and geometry.

ORNAMENTAL HORTICULTURE TECHNOLOGY
NURSERY MANAGEMENT (NM)

Associate Degree / Two Years

The Nursery Management Curriculum deals with tree and shrub production and sales. A person entering this field must be able to propagate, grow to a commerical size, and profitably sell, the many different species and varieties of woody plants. This program also includes learning to identify commercially important plants as well as designing and constructing landscape features. The fundamental principles of Horticultural Science are taught the first two semesters. In the third and fourth semesters, you specialize in such areas as nursery production, landscape surveying, woody and herbaceous plants, plant propagation, entomology, planting plans and horticulture mechanics.

Types of Jobs: Tree and shrub growers with private nurseries, nursery stock salesman or buyer, horticulturist with a governmental agency, horticultural landscaping, and, ultimately, your own business.

Job Opportunites: Good to excellent; a recent survey has shown a demand for trained personnel in the field of nursery management, particularly for those who have had considerable lab and greenhouse experience.

FIRST SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BIO 03	Botany (Horticulture)	3	2	3	80
ENG 11	Language and Composition I	3	3	1	64
MAT 11	Basic Algebra	3	3	0	48
OH 10	Introduction to Horticulture	1	1	0	16
OH 11	Horticulture Soils	3	2	3	80
OH 12	Woody Plants I	2	1	3	64
*PE	Physical Education	1	0	2	32
		16	12	12	384

SECOND SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CHE 101	General Chemistry I	4	3	3	96
ENG 12	Language and Composition II	3	3	1	64
OH 21	Nursery Production I	3	2	3	80
OH 23	Woody Plants II	2	1	3	64
OH 24	Plant Propagation	3	2	3	80
OH 25	Plant Pests	3	2	3	80
		18	13	16	464

THIRD SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
OH 32	Herbaceous Plants	2	1	3	64
OH 34	Plant Diseases	3	2	3	80
OH 35	Nursery Production II	3	2	3	80
OH 36	Landscape Surveying	3	1	6	112
OH 38	Woody Plants III	2	1	3	64
**Elective		3	3	0	48
		16	10	18	448

FOURTH SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
OH 44	Salesmanship and Sales Practices	3	2	3	80
OH 45	Landscape Construction	3	1	6	112
OH 46	Horticulture Mechanics	3	2	3	80
OH 47	Planting Plans	3	1	6	112
**Elective		3	3	0	48
*PE	Physical Education	1	0	2	32
		16	9	20	464

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Electives: BM 35 - Business Psychology; BM 36 - Marketing; SOC 101 - Introduction to Sociology; BS 15 - Typewriting; BA 11 - Elementary Accounting; ECO 11 - Basic Economics.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

SERVICE AND OPERATION OF HEAVY CONSTRUCTION EQUIPMENT (SO)

Certificate / Two Years

Service and Operation of Heavy Construction Equipment will prepare you to operate, service, and repair all types of construction machinery and become a specialist in one or two types. Welding and surveying basics are included in the program as well as complete coverage of mechanical safety measures.

Types of Jobs: Operation, mechanical repair, service of heavy equipment. Self-employment or work with contractors, dealers, leasors, miners, quarriers.

Job Opportunities: Unlimited with top pay and advancement governed only by your own ability, interest, and ambition.

FIRST SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
AM 11	Automotive Mechanics I	6	3	9	192
AM 12	Automotive Mechanics II	6	3	9	192
ENG 03	Communications I	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		18	12	19	496

SECOND SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
SO 21	Service and Operation I	6	3	9	192
SO 22	Service and Operation II	6	3	9	192
ENG 04	Communications II	3	3	1	64
MAT 20	Basic Algebra	3	3	0	48
		18	12	19	496

THIRD SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
SO 33	Service and Operation III	6	2	12	224
SO 34	Service and Operation IV	6	2	12	224
BM 47	Small Business Management	3	3	0	48
		15	7	24	496

FOURTH SEMESTER

	Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
SO 41	Service and Operation V	7	3	12	240
SO 42	Service and Operation VI	7	3	12	240
		14	6	24	480

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with the concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *earth science department*

FR 10 INTRODUCTION TO FORESTRY

A general review of the historic role of forests in the United States leading to their present use and importance to the nation. 1 Cr. (1-0).
Prerequisites: None.

FR 11 DENDROLOGY

Classification, identification, and distribution of woody plants in the United States, with special emphasis on species of local commercial importance. 3 Cr. (2-3).
Prerequisite: None.

FR 13 FOREST MENSURATION

The measurement of standing trees, of logs, and of other cut wood products; the determination of the contents of these products in terms of board feet, cubic feet, cords, and pounds. The measurement of growth in trees and forests.
3 Cr. (2-3).
Prerequisites: None.

FR 14 FOREST BOTANY

The study of plant physiology and anatomy with special reference to trees. The stem structure of trees and the identification of commercial trees species based on microscopic characteristics of the wood. 3 Cr. (3-0).
Prerequisite: None.

FR 21 PHOTOGRAMMETRY AND FOREST SURVEYING I

This course is an introductory study of the basic techniques of photogrammetry, photo-interpretation; and also an elementary course in surveying, including the fundamentals of plane surveying and the use and care of equipment. 3 Cr. (1-6).
Prerequisites: None.

FR 25 FOREST ECOLOGY

The study of the forest and the environment leading to a familiarity with basic ecological concepts and how they relate to forestry problems. 3 Cr. (2-3).
Prerequisites: None.

FR 28 ADVANCED FOREST MENSURATION

Quality determination of logs and trees. Estimating volumes of large timber areas by different sampling techniques. The use and interpretation of aerial photos in forest surveys.
3 Cr. (2-3).
Prerequisites: None.

FR 31 WILDLIFE MANAGEMENT

This course is a study of wildlife management and the conservation of wildlife. Emphasis is placed on techniques of aging and sexing wildlife, habitat evaluation, and habitat improvement. It is intended that this course will increase the student's understanding of the relation of forest management practice to wildlife management practice. 3 Cr. (2-3).
Prerequisites: None.

FR 32 FOREST SURVEYING II

The operation, care and maintenance of logging machinery, forest fire control equipment and related mechanical devices in common use in forest operations. 3 Cr. (2-3).
Prerequisites: None.

FR 33 EQUIPMENT AND MACHINERY

The operation, care and maintenance of logging machinery, forest fire control equipment and related mechanical devices in common use of forest operations. 3 Cr. (2-3).
Prerequisites: None.

FR 36 TIMBER HARVESTING

The felling, skidding, and transportation of timber products from the woods to the point of manufacture. Application of modern logging methods and techniques, including the breakdown of entire tree stems into lengths and units of highest economic values. 3 Cr. (2-3).
Prerequisites: None.

FR 38 FOREST PROTECTION

The causes, effects and methods of control of forest fires. The identification, effects and control of other harmful

agents, principally insects and diseases. 3 Cr. (3-0).
Prerequisites: None.

FR 42 FOREST PRODUCTS

The conversion of round timber products into a semi-finished state, and the manufacture of these raw materials into finished consumer products. This includes the seasoning of lumber and the preservative treatments of wood to improve its usefulness. 3 Cr. (2-3).
Prerequisites: None.

FR 44 FOREST LAND MANAGEMENT

The administration and management of public and privately owned forest lands for purposes of timber production, recreation use, wildlife and water, both as single management objectives, and under a coordinated multiple use management program. 3 Cr. (2-3).
Prerequisites: None.

FR 45 FOREST AND RECREATION IMPROVEMENTS

The principle types of outdoor recreation, supply and demand for them, and the psychology of recreation are studied. The importance of forest recreation and its relationship to other forest uses and the organization and administration of forest land for recreational purposes are considered. Plans and designs of recreational areas are studied. 3 Cr. (2-3).
Prerequisites: None.

FR 46 SILVICULTURE

The study of forestry practices and systems used in the establishment and management of trees for the sustained production of timber products. 3 Cr. (2-3)
Prerequisites: None.

OH 10 INTRODUCTION TO HORTICULTURE

Instruction, orientation and field observation in the various phases of horticulture. This includes two all day field trips on Saturdays. 1 Cr. (1-0).
Prerequisites: None.

OH 11 HORTICULTURE SOILS

A study of soil texture, structure, organic matter, and plant nutrients as they are related to the use of lime and fertilizers. A study of synthetic soils and moisture-air relationships is included. 3 Cr. (2-3).
Prerequisites: None.

OH 12 WOODY PLANTS I

An introduction to the study of woody plants grown in nurseries for landscape purposes and of those found in arboretums, woodlands, and fields of the various geographical areas or regions of the United States. 2 Cr. (1-3).
Prerequisites: None.

OH 20 GREENHOUSE CROP PRODUCTION I

An introduction to greenhouse crop production with emphasis on environmental control, plant culture, facilities, and equipment. Also demonstration of techniques. 3 Cr. (2-3).
Prerequisites: None.

OH 21 NURSERY PRODUCTION I

Stress is placed on the theory and practices necessary to produce profitable nursery stock. The maintenance of a productive nursery, soil, crop, and land rotations are studied. 3 Cr. (2-3).
Prerequisites: None.

OH 23 WOODY PLANTS II

A continuation of Woody Plants I in which additional trees and shrubs are studied with major emphasis upon the detailed study of broad leaved and narrow leaved evergreens. 2 Cr. (1-3).
Prerequisites: None.

OH 24 PLANT PROPAGATION

Theory and practice of plant propagation by sexual and asexual means with applications in floriculture production, nursery production, and forestry are stressed. 3 Cr. (2-3).
Prerequisites: None.

OH 25 PLANT PESTS

A study of the nature, structure, growth, habits, and injurious effects and control of insects and related forms. 3 Cr. (2-3).
Prerequisites: None.

OH 30 FLORAL DESIGN

Instruction and application of principles in the art of floral design as to form, styles and composition. Designing of floral arrangements, wreaths, sprays, baskets, bouquets, wedding flowers, and corsages is included. 3 Cr. (1-6).
Prerequisites: None.

OH 31 GREENHOUSE CROP PRODUCTION II

Production of cut flowers and potted plants with emphasis on techniques used for important commercial crops. Each crop will be grown by students using school facilities. 3 Cr. (2-3).
Prerequisites: None.

OH 32 HERBACEOUS PLANTS

A study of the classification, identification, and general culture of perennials, bulbs, and roses. Landscape use and design of flower borders is practiced. 2 Cr. (1-3).
Prerequisites: None.

OH 33 HOUSE AND CONSERVATORY PLANTS

The identification, culture, and propagation of florist's pot plants and conservatory plants are studied. Principles and construction of terrariums and dish gardens are included. 3 Cr. (2-3).
Prerequisites: None.

OH 34 PLANT DISEASES

A study of the identification and control of diseases that are pests of ornamental trees, shrubs, and flowers. 3 Cr. (2-3).
Prerequisites: None.

OH 35 NURSERY PRODUCTION II

Production schedules are correlated with nursery land use. Factors affecting choice and quantities of stock to be grown, as well as development of cost finding and price establishing, are considered. 3 Cr. (2-3).
Prerequisites: None.

OH 36 LANDSCAPE SURVEYING

An introduction to the values and importance of surveying as adapted to landscape planting and construction projects. Topographical mapping; measurement of land areas, establishing grades, and methods used in the preparation of working drawings and grading plans are taught. 3 Cr. (1-6).
Prerequisites: None.

OH 38 WOODY PLANTS III

An advanced study of plants previously considered - especially names, varieties, and cultivars, and of the lesser known trees, shrubs, vines and ground covers. 2 Cr. (1-3).
Prerequisites: None.

OH 40 FLOWER SHOP OPERATION

An introduction to retail florist business. Emphasis is placed on personnel, sales, buying, inventory, and general principles related to the commercial retail florist. Practice of flower shop operation is included. 4 Cr. (3-3).
Prerequisites: None.

OH 41 GREENHOUSE CROP PRODUCTION III

A combination of production of potted plants, bedding plants, and other crops using commercial techniques. Production, planning, crop rotation, and the role of management will also be studied. 3 Cr. (2-3).
Prerequisites: None.

OH 44 SALESMANSHIP AND SALES PRACTICE

A study of the basic principles of selling together with the operation of a retail horticultural outlet. 3 Cr. (2-3).
Prerequisites: None.

OH 45 LANDSCAPE CONSTRUCTION

The information gathered in lectures and assignments is utilized in the course to establish landscape features within the horticultural gardens of the College. Establishment and maintenance of turf areas is included. 3 Cr. (1-6).
Prerequisites: None.

OH 46 HORTICULTURE MECHANICS

Operation and maintenance of horticulture equipment to include small gasoline engines, electric motors, electrical fans, environmental controls, and other soil working and irrigation equipment. 3 Cr. (2-3).
Prerequisites: None.

OH 47 PLANTING PLANS

This course is designed to teach the principles of landscape design. In lecture classes emphasis is placed on the effective use of plant materials to make a building more attractive and its surroundings more useful. In the laboratory basic drawing and drafting procedures are reviewed. 3 Cr. (1-6).
Prerequisites: None.

SO 21 SERVICE AND OPERATION I

Mechanics of heavy equipment; welding principles; heavy-duty engines. 6 Ut. (3-9), 192 Hrs.
Prerequisites: None.

SO 22 SERVICE AND OPERATION II

Fuel systems; hydraulics; pneumatics; chassis work. 6 Ut. (3-9), 192 Hrs.
Prerequisites: None.

SO 33 SERVICE AND OPERATION III

Engine and vehicle maintenance; repair; electrical systems; lubrication and lubrication systems. 6 Ut. (2-12), 224 Hrs.
Prerequisites: None.

SO 34 SERVICE AND OPERATION IV

Equipment operation; equipment trouble shooting; ventilation. 6 Ut. (2-12), 224 Hrs.
Prerequisites: None.

SO 41 SERVICE AND OPERATION V

Operation of major and minor vehicles; minimal service duties. 7 Ut. (3-12), 240 Hrs.
Prerequisites: None.

SO 42 SERVICE AND OPERATION VI

Continued operation of bulldozer, grader, crane, fork lift, selfpropelled scraper; pushers, auger. 7 Ut. (3-12), 240 Hrs.
Prerequisites: None.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

ELECTRICAL DEPARTMENT / Career Programs

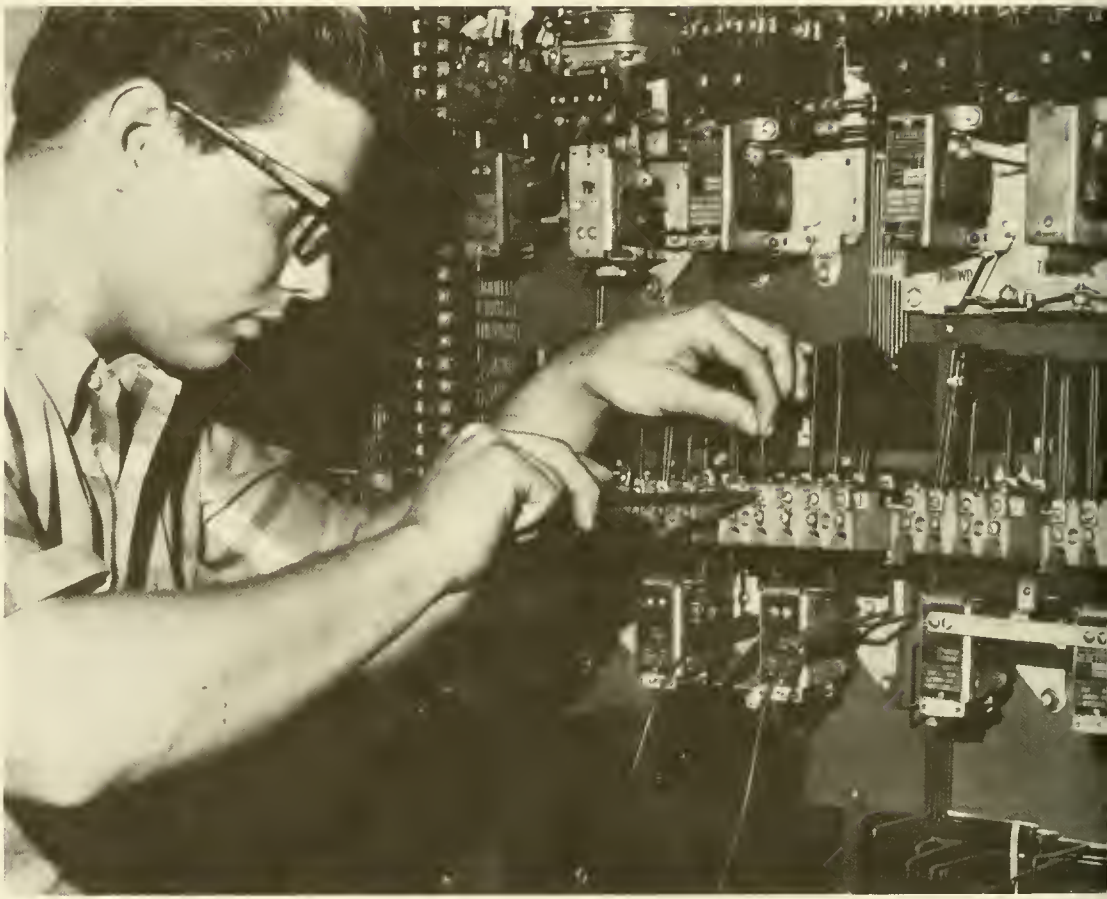
DONALD O. YOUNG, SR., Chairman

Associate Degree

EL Electrical Technology

Certificate

EW Electrical Construction



ELECTRICAL TECHNOLOGY (EL)

Associate Degree / Two Years

As an electrical technologist, you will be working with electronics equipment or electrical machinery. Your degree program will stress electrical basics including theory, circuits, industrial electronics, electrical machinery and electrical construction. Courses in mathematics, science, and communications will enhance your vocational opportunities.

Types of Jobs: Electrical technology and laboratory work; industrial maintenance technician; trouble shooter for electrical equipment manufacturers.

Job Opportunities: Unlimited and excellent starting salaries with opportunities for industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
EL 15	Direct Current Fundamentals	5	4	3	112
EL 16	Basic Wiring Lab	3	1	6	112
EL 18	Accident Prevention	2	2	0	32
ENG 11	Language & Composition I	3	3	1	64
MAT 103	College Algebra	3	4	1	80
*PE	Physical Education	1	0	2	32
		17	14	13	432

SECOND SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
EL 25	Alternating Current Fundamentals	5	4	3	112
EL 26	Basic Electrical Construction Lab	2	1	3	64
EL 27	Residential Blueprint Reading & National Electrical Code	4	4	0	64
ENG 12	Language & Composition II	3	3	1	64
MAT 104	Trigonometry	3	4	1	80
		17	16	8	384

THIRD SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
EL 36	Basic Electronics	4	4	0	64
EL 37	Industrial Electronics Lab	2	0	6	96
EL 38	Electrical Motor Control	4	3	3	96
ED 02	Engineering Drafting	2	1	3	64
PHY 21	Physics-Mechanics	4	3	3	96
*PE	Physical Education	1	0	2	32
		17	12	14	448

FOURTH SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
EL 42	Advanced Electrical Theory	3	3	0	48
EL 47	Electrical Systems Analysis	2	1	3	64
EL 48	Electrical Construction Blueprint Reading	4	4	0	64
ECO 11	Basic Economics	3	3	0	48
PHY 33	Physics-Heat and Light	4	3	3	96
		16	14	6	320

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Electives (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree studentsts may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: Algebra and geometry; one year of science.

ELECTRICAL CONSTRUCTION (EW)

Certificate / Two Years

If you have the desire and aptitudes to work in the electrical trades, but do not want to get involved in the more theoretical aspects of them, this is the program for you. You will study some mathematics, science, and communications skills, but program stress is placed on the manual skills which you will need to install wiring and electrical equipment in buildings with the aid of blueprints.

Types of Jobs: Electrical construction union apprentice, industrial maintenance and construction electrician; self-employment in residential and commercial wiring and in electrical shops; electrical tester or inspector; power company employee.

Job Opportunities: Unlimited with good to excellent salaries and opportunities for advancement and industry-financed education.

FIRST SEMESTER

Course			Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
EL	16	Basic Wiring Lab	3	1	6	112
EL	18	Accident Prevention	2	2	0	32
EW	11	Direct Current Fundamentals	6	5	5	160
EW	18	Motor Rewinding I	2	0	6	96
ENG	03	Communications I	3	3	1	64
MAT	10	General Mathematics	3	3	0	48
			19	14	16	512

SECOND SEMESTER

Course			Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
ED	01	Mechanical Drawing	2	1	3	64
EW	21	Alternating Current Fundamentals	5	4	5	160
EW	28	Motor Rewinding II	2	0	6	96
EW	32	Basic Electronics	4	4	0	64
ENG	04	Communications II	3	3	1	64
MAT	20	Algebra	3	3	0	48
			19	15	14	496

THIRD SEMESTER

Course			Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
ED	02	Engineering Drafting	2	1	3	64
EW	31	Basic Electrical Construction Lab	2	0	7	112
EW	33	Basic Electronics Lab	2	0	6	96
EW	34	Electric Motor Control	4	3	3	96
EW	35	Residential Blueprint and Code	4	4	0	64
PHY	20	Physics Survey	3	3	0	48
			17	11	19	480

FOURTH SEMESTER

Course			Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
EW	41	Commercial and Industrial Blueprint Reading	4	4	0	64
EW	44	Advanced Electrical Construction	3	1	8	144
EW	45	Electrical Machinery	2	2	2	64
EW	46	Electrical Equipment Repairs	2	2	2	64
EW	47	Motor Rewinding and Repairs	2	0	6	96
ECO	02	Fundamentals of Economics	3	3	0	48
			16	12	18	480

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with the concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *electrical department*

EL 15 DIRECT CURRENT FUNDAMENTALS

A study of the basic principles of electricity and the laws and formulas which are used to solve electrical problems. Principles of magnetism and their relationship to direct current generators and motors and other electrical machinery. Laboratory work to enable the student to hook up equipment and instruments. 5 Cr. (4-3).
Prerequisites: None.

EL 16 BASIC WIRING LAB

Instruction in wiring basic electrical circuits, residential lighting and receptacles circuits. Low voltage switching and control circuits. Electrical underwriters rules. Proper use and care of hand tools. 3 Cr. (1-6).
Prerequisites: None.

EL 18 ACCIDENT PREVENTION

Principles of accident prevention in industry and electrical safety procedures in all human activities; lifesaving techniques. 2 Cr. (2-0).
Prerequisites: None.

EL 25 ALTERNATING CURRENT FUNDAMENTALS

To give the student an understanding of the fundamental principles of the behavior and flow of alternating current electricity. Class and homework assignments include the solving of problems involving current, voltage, impedance, reactance and power factor in series and parallel circuits. Learning the operating principles of AC motors, generators and control equipment. 5 Cr. (4-3).
Prerequisities: None.

EL 26 BASIC ELECTRICAL CONSTRUCTION LAB

A further study of the use of electrical equipment and materials, including all types of wiring devices and wiring systems. Planning and actually installing electrical systems, bending conduit, pulling in wires, connecting devices, lighting systems and distribution systems. 2 Cr. (1-3).
Prerequisites: None.

EL 27 RESIDENTIAL BLUEPRINT READING AND NATIONAL ELECTRICAL CODE

Planning and drawing of residential wiring systems; calculating number and size of circuits needed for lighting, appliance, and heating; remote control systems; study of National Electrical Code requirements for residential, industrial, and commercial wiring. 4 Cr. (4-0).
Prerequisites: None.

EL 36 BASIC ELECTRONICS

The fundamentals of electronics including the basic symbols and circuit configurations. A study of electron tubes and solid state devices and their use of rectifier, amplifier and oscilator circuits. Industrial applications in various circuit configurations with electron tubes and solid state devices. 4 Cr. (4-0).
Prerequisites: None.

EL 37 INDUSTRIAL ELECTRONICS LAB

Teaching of proper soldering techniques, component and hardware identification, chassis layout and assembly. Design and assembly of basic electronic circuits involving rectification, filtering, amplifier circuits, oscillator circuits, phase shift and polyphase rectification. Basic solid state circuits. 2 Cr. (0-6).
Prerequisites: None.

EL 38 ELECTRICAL MOTOR CONTROL

This course is designed to teach the student about motor control systems in industry, simple and complex, and to teach him how to trace circuits and trouble shoot a system from a schematic drawing. He will also study the principles of rotating and magnetic amplifiers, and static switching. 4 Cr. (3-3).
Prerequisites: None.

EL 42 ADVANCED ELECTRICAL THEORY

A course in the solution of network problems and problems involving charge and discharge of capacitors, rotating vectors and other problems involving alternating electricity. 3 Cr. (3-0).
Prerequisites: None.

EL 47 ELECTRICAL SYSTEMS ANALYSIS

This course is intended to provide the student with an understanding of electrical equipment and electrical testing equipment that will enable him to locate malfunctioning equipment, and repair it in a minimum of time. Preventive maintenance and maintenance records are covered in sufficient detail to enable the student to establish the system in industry. The student should learn the usage of voltmeters, ammeters, wattmeters, ohmmeters, meg-ohmmeters, wheatstone bridge, tachometer, and all hand tools associated with the electrical trade. 2 Cr. (1-3).
Prerequisites: None.

EL 48 ELECTRICAL CONSTRUCTION BLUEPRINT READING

Blueprint reading and circuit planning of electrical construction in factories and commercial buildings. Reference to the rules of the National Electric Code and the department of Labor and Industry. 4 Cr. (4-0).
Prerequisites: None.

EW 11 DIRECT CURRENT FUNDAMENTALS

Study of basic electrical laws, electrical terms, batteries, electro-statics, electrical meters and instruments, direct-current machinery. 6 Ut. (5-5), 160 Hrs.

EW 18 MOTOR REWINDING I

Electrical and mechanical features of various single phase motors; lab work developing knowledge and skill in rewinding and repairing single phase motors. 2 Ut. (0-6), 96 Hrs.

EW 21 ALTERNATING CURRENT FUNDAMENTALS

Study of nature of alternating current electricity as related to residential, commercial and industrial power use; laws and formulas needed for the solution of problems in the use of AC power; study of AC machinery; lab work for demonstrating AC electrical principles; practical experience in hook-up of equipment and instruments. 5 Ut. (4-5), 160 Hrs.

EW 28 MOTOR REWINDING II

Emphasis on skill and speed in rewinding and assembling single phase motors; repairing or rewinding of one or more types of motor armatures. 2 Ut. (0-6), 96 Hrs.

EW 31 BASIC ELECTRICAL CONSTRUCTION LAB

Experience in the use and installation of electrical materials; house wiring circuits, wiring boxes of many kinds, armored cable, wire mold and romex, fluorescent and incandescent light switches and receptacle circuits. 2 Ut. (0-7), 112 Hrs.

EW 32 BASIC ELECTRONICS

Study of the principles and the use of tubes and diodes in industrial electronic equipment such as recitifiers and motor control circuits. 4 Ut. (4-0), 64 Hrs.

EW 33 BASIC ELECTRONICS LAB

Construction of basic electronic circuits; proper use of hand tools, wiring and electronic components, soldering and cable lacing; techniques of using multimeters and other testing equipment. 2 Ut. (0-6), 96 Hrs.

EW 34 ELECTRIC MOTOR CONTROL

Lab assignments involving wiring of starting and control equipment for DC and AC motors including start-stop, forward-reverse and jogging push button stations, speed controls, plugging and dynamic braking circuits; hook-up of various types of servo motors to show application in industry. 4 Ut. (3-3), 96 Hrs.

EW 35 RESIDENTIAL BLUEPRINT AND CODE

Study of residential wiring circuits, low voltage remote control switching and electric heating; study of the National Electrical Code book and its provisions dealing with residential and other types of wiring. 4 Ut. (4-0), 64 Hrs.

EW 41 COMMERCIAL AND INDUSTRIAL BLUEPRINT READING

Study of electrical construction planning for industry and commerce and relevant electrical code. 4 Ut. (4-0), 64 Hrs.

EW 44 ADVANCED ELECTRICAL CONSTRUCTION

Practice in installation of rigid conduit and other electrical wireways; pulling in and wiring of motor controllers and other electrical equipment; study of blueprints of large electrical construction jobs. 3 Ut. (1-8), 144 Hrs.

EW 45 ELECTRICAL MACHINERY

Review of electrical fundamentals machinery with lab work designed to increase skill in hooking up electrical machinery and meters. 2 Ut. (2-2), 64 Hrs.

EW 46 ELECTRICAL EQUIPMENT REPAIRS

Repair and adjustment of motor contractors; push button stations and relays; rewinding and phasing of small transformer coils, replacing of faulty rectifier plates; repairing lab equipment and other electrical equipment belonging to the college. 2 Ut. (2-2), 64 Hrs.

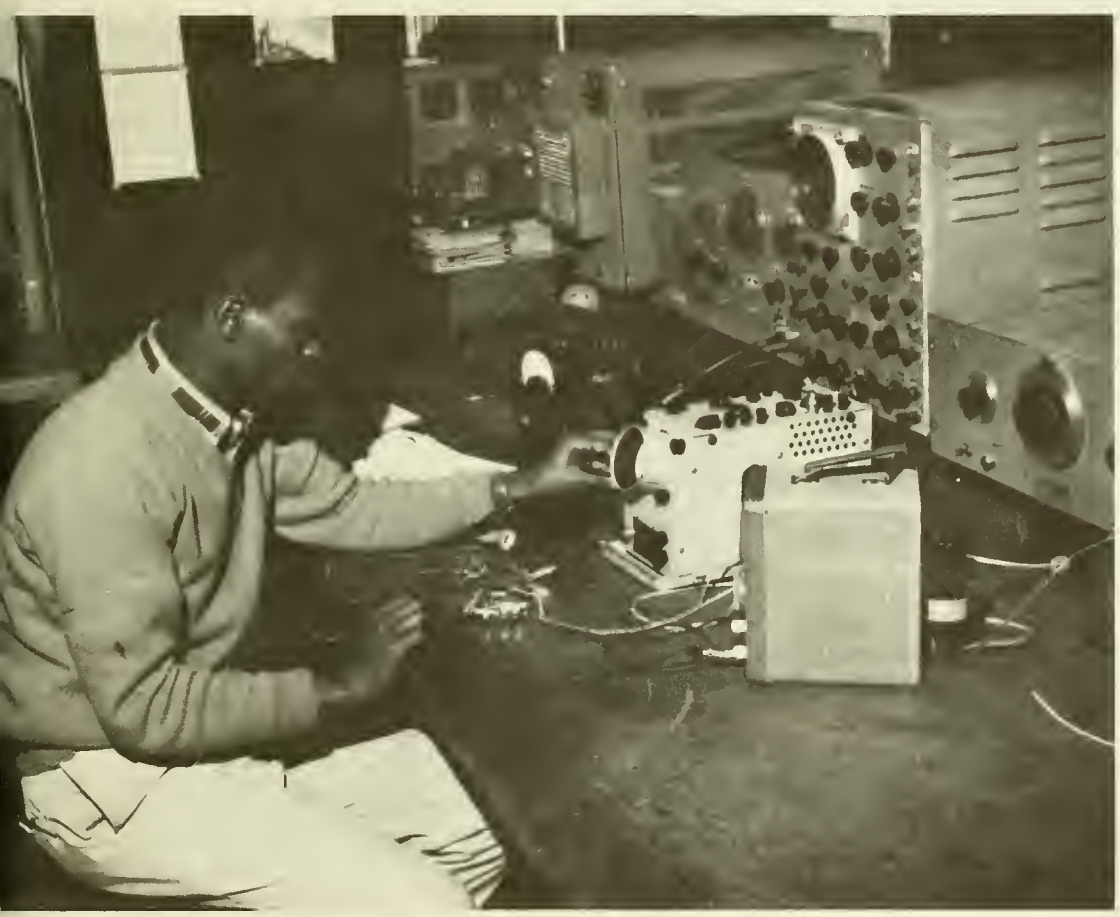
EW 47 MOTOR REWINDING AND REPAIRS

Development of additional skill and knowledge in rewinding and repair of single-phase and three-phase motors.
2 Ut. (0-6), 96 Hrs.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

ELECTRONICS DEPARTMENT / Career Program

CLINTON B. DAWES, Chairman



Associate Degree

ET Electronics Technology

ELECTRONICS TECHNOLOGY (ET)

Associate Degree / Two Years

The Electronics Technology Program will prepare you to apply basic electronics theory to current practices, and it will help you to understand future developments as they take place. Through practical laboratory work with modern electronics equipment, you will learn to assist electrical engineers in the design, construction, installation, and testing of all kinds of electronic equipment.

Types of Jobs: Electronics engineering technician, electronic instrument technican, electronic laboratory technician, industrial electronic technician, production technician, and technical writer.

Job Opportunities: Excellent with good starting salaries and fringe benefits including opportunities for further industry-financed education.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ET	11	Electronics-Theory I	5	5	0	80
ET	12	Electronics-Applications I	3	0	9	144
ET	14	Electrical Circuit Analysis	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			18	15	13	448

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ET	21	Electronics-Theory II	5	5	0	80
ET	22	Electronics-Applications II	3	0	9	144
ET	23	Basic Electronics Circuit Analysis	3	3	0	48
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
*PE		Physical Education	1	0	2	32
			18	15	13	448

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ET	33	Intermediate Electronics Circuit Analysis	3	3	0	48
ET	34	Electronics-Theory III	5	5	0	80
ET	37	Electronics-Applications III	3	0	9	144
ECO	11	Basic Economics	3	3	0	48
PHY	21	Physics-Mechanics	4	3	3	96
			18	14	12	416

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED	01	Mechanical Drawing	2	1	3	64
ET	47	Electronics-Theory IV	5	5	0	80
ET	48	Electronics-Application IV	3	0	9	144
PHY	33	Physics-Heat and Light	4	3	3	96
***Electronics Elective			1-3	0-3	0-3	48
**Elective (General Studies)			3-4	3-4	0	48-64
			18-21	12-16	15-18	480-496

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Electives (General Studies): See page 76 for the applicable list of electives.

***Electronics Electives: ET 40 - Calibration and Standardization; ET 44 - Advanced Circuit Analysis; CS 04 - Technical Computer Programming.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Recommended high school subjects: Algebra and geometry; one year of science.

COURSE DESCRIPTIONS / *electronics department*

ET 11 ELECTRONICS—THEORY I

Electricity and electronics theory including sttucture of matter, basic atomic theory, DC and AC, Ohm's Law, Kirchoff's Law; electrical calculations and formulas; magnetism and electromagnetism, vector analysis; resonance; electrical filters; measuring instruments. 5 Cr. (5-0).
Prerequisites: None.

ET 12 ELECTRONICS—APPLICATIONS I

Application of electronic concepts to component testing and identification, wiring electrical and electronic circuits; demonstration and laboratory work coupled with extensive use of electronic tools and equipment. 3 Cr. (0-9).
Prerequisite or Corequisite: ET 11.

ET 14 ELECTRICAL CIRCUIT ANALYSIS

First of three or four semester sequential courses in analysis, tracing, and problem solving including close analysis of AC and DC circuits. Special emphasis on circuit tracing and solution of electrical problems using mathematical approaches. 3 Cr. (3-0).
Prerequisite or Corequisite: ET 11.

ET 21 ELECTRONICS—THEORY II

Continuation of ET II: basic theory covering vacuum tubes and solid state devices as well as circuits using these devices; advanced electrical and electronic measuring instruments.
5 Cr. (5-0).
Prerequisites: ET 11, MAT 103.

ET 22 ELECTRONICS—APPLICATIONS II

Continuation of ET 12; construction and testing of vacuum tube and solid state systems such as amplifiers, detectors; theory and operation of laboratory testing equipment including gain, distortion, frequency response and power output measurements. 3 Cr. (0-9).
Prerequisites or Corequisites: ET 12, ET 21.

ET 23 BASIC ELECTRONICS CIRCUIT ANALYSIS

Continuation of ET 14; complete analysis of electronic circuits featuring design and component selections as well as more advanced circuit checking and testing. 3 Cr. (3-0).
Prerequisites or Corequisites: ET 14, ET 21.

ET 33 INTERMEDIATE ELECTRONICS CIRCUIT ANALYSIS

Continuation of ET 23; closer analysis of more complicated circuitry including pulse techniques and pulse generators; blocking oscillators; multivibrators and shaping networks; integrating and differentiating networks. 3 Cr. (3-0).
Prerequisites or Corequisites: ET 23, ET 31.

ET 34 ELECTRONICS–THEORY III

Continuation of ET 21; detailed study of solid state and vacuum tube circuits and devices, and includes microwaves, wave propagation, transmission lines, gating and logic circuits. 5 Cr. (5-0).
Prerequisites: ET 21, MAT 104.

ET 37 ELECTRONICS–APPLICATIONS III

Continuation of ET 22; construction and analysis of more sophisticated solid state and vacuum tube equipment; use of more advanced types of lab instruments; laboratory report writing. 3 Cr. (0-9).
Prerequisites or Corequisites: ET 22, ET 34.

ET 40 CALIBRATION AND STANDARDS

Lecture/demonstration course in calibration techniques using laboratory standard type instruments which are directly traceable to the National Bureau of Standards. 1 Cr. (0-3).
Prerequisite: ET 34.

ET 44 ADVANCED CIRCUIT ANALYSIS

Close analysis of wave and pulses as found in color television; alignment of electronic circuits, including color television. 3 Cr. (3-0).
Prerequisite or Corequisite: ET 47.

ET 47 ELECTRONICS THEORY IV

Systems and waveform analysis; includes cathode-ray display devices, laboratory type instruments; T.V. and servo systems; computer principles. 5 Cr. (5-0).
Prerequisite: ET 34.

ET 48 ELECTRONICS–APPLICATIONS IV

Practical applications of advanced types of precision electronic instruments, including waveform measurements, signal and circuit tracing, dynamic measurements of systems performance. 3 Cr. (0-9).
Prerequisites or Corequisites: ET 37, ET 47.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

FOOD SERVICE MANAGEMENT DEPARTMENT / Career Program

VIVIAN MOON, Chairman

Associate Degree

FS Food Service Management

Certificate

FP Food Preparation

FOOD SERVICE MANAGEMENT (FS)

Associate Degree / Two Years

If you would like to be a food service supervisor or would like to assist dietitians, this is the program tailored for you. Fundamentals of food preparation, nutrition, organic chemistry, and work direction will be stressed in the program studies. As a graduate of the program, you will be entitled to apply for membership in the Hospital Institution and Educational Food Service Society, an organization recognized by the American Dietetic Association.

Types of Jobs: Food service supervisor, assistant dietitian, supervisor positions in hospitals, nursing homes, child care centers, schools, colleges, and restaurants.

Job Opportunities: Since the position of food service supervisor is relatively new, opportunities are unlimited. There is an urgent, widespread need for qualified people in the field, and advancements are dependent upon individual ability and interest.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	11	Elementary Accounting	3	3	1	64
FS	15	Basic Food Theory and Preparation Techniques	2	1	3	64
FS	16	Introduction to Food Service Industries	1	1	0	16
FS	17	Nutrition I - Health	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
CHE	101	General Chemistry I	4	3	3	96
*PE		Physical Education	1	0	2	32
			17	14	10	384

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
FS	05	Quantity Foods I-Theory and Preparation Techniques	3	2	3	80
FS	18	Nutrition II-Menu Planning	2	2	0	32
ENG	12	Language and Composition II	3	3	1	64
CHE	102	General Chemistry II	4	3	3	96
PSY	101	General Psychology	3	3	0	48
**Elective (General Studies)			3-4	3-4	0	48-64
			18-19	16-17	7	368-384

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM	21	Business Communications	3	3	0	48
FS	19	Quantity Foods II - Management Theory and Practice	3	1	6	112
FS	20	Food Purchasing, Storage and Sanitation	3	3	0	48
IM	31	Supervision-Human Relations	3	3	0	48
**Elective (General Studies)			3-4	3-4	0	48-64
*PE		Physical Education	1	0	2	32
			16-17	13-14	8	336-352

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM	13	Principles of Business	3	3	0	48
FS	22	Beverage Management	2	2	0	32
FS	23	Food and Beverage Merchandising	2	2	0	32
FS	24	Experience Seminar	3	1	6	112
FS	25	Diet Therapy	2	2	0	32
IM	40	Work Simplification, Time Study and Incentives	3	3	0	48
**Elective (General Studies)			3-4	3-4	0	48-64
			18-19	16-17	6	352-368

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Elective (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: Algebra and geometry; one year of science.

FOOD PREPARATION (FP)

Certificate / Two Years

This program is designed to meet the growing demand for vocationally trained persons for the Food Service Industry. Students enrolling in the two-year course will be trained in kitchen, bakery, and sanitation management: as dining room supervisors, head cooks and chefs. The courses will be taught by lecture and lab practice, some of which will be in the college eating facilities as well as local cooperating restaurants, bakeries, schools and hospitals.

Foods courses include techniques in all phases of food production. There are also background courses in nutrition, diet therapy, the maths, English, economics and human relationships. Students graduating from this course can go as far in the commercial food service industry as their initive and creativity permits.

Types of Jobs: Kitchen, bakery, or dining room supervisors; Sanitation Manager; Head Cook or Chef; Food, supplies or equipment Salesman.

Job Opportunities: The growing food industry is in great need of trained people to work in food production. These graduates with their working abilities and capabilities for training others in the 'back of the house' operations are a real asset to the industry. A graduate in this program has as much opportunity for advancement as he is willing to work for.

FIRST SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
FP 01	Nutrition	2	2	0	32
FP 02	Basic Food Preparation	8	2	20	352
MAT 10	General Mathematics	3	3	0	48
ENG 03	Communications I	3	3	1	64
		16	10	21	496

SECOND SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
FP 03	Quantity Foods	8	2	20	352
FP 04	Diet Therapy	2	2	0	32
MAT 20	Algebra	3	3	0	48
ENG 04	Communications II	3	3	1	64
		16	10	21	496

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
FP 05	Summer Practicum	3	0	10	120

THIRD SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
FP 06	Managing Quantity Food Production	10	4	20	384
FP 07	Food Preparation-Fancy Foods	1	1	2	48
ECO 02	Fundamentals of Economics	3	3	0	48
		14	8	22	480

FOURTH SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
FP 08	Quantity Food Merchandising	10	4	20	384
BM 47	Small Business Management	3	3	0	48
IM 31	Supervision-Human Relations	3	3	0	48
		16	10	20	480

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with the concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *food service management department*

FP 01 NUTRITION

Learning how to apply human nutrition in everyday living. Learning the role of each nutrient in creating happy, healthy people, more resistant to disease. 2 Ut. (2-0), 32 Hrs.
Prerequisites: None.

FP 02 BASIC FOOD PREPARATION

Basic understanding of Food Composition and the art of serving it in an appealing, pleasant manner. This is an introduction to Food Industries. Learning to prepare salads and sandwiches in quantity, to bake bread products and desserts. Students receive training in cafeteria and restaurant serving. (In coordinating lab experiences with lectures it is not always possible to cover material in sequence listed.) 8 Ut. (2-20), 352 Hrs.
Prerequisites: None.

FP 03 QUANTITY FOODS-MEAL PREPARATION AND MENU PLANNING

Learning the techniques of quantity cooking of meats, poultry, fish, vegetables and casserole combinations. (In coordinating lab experiences with lectures the topics cannot always be presented in the order listed.) 8 Ut. (2-20), 352 Hrs.
Prerequisites: None.

FP 04 DIET THERAPY

This course is designed to help students correlate nutrition into actual diets. It orients students in diet modifications for the acute and chronically ill in relation to various types of diseases. 2 Ut. (2-0), 32 Hrs.
Prerequisites: None.

FP 05 SUMMER PRACTICUM

Food Certificate Summer Practicum—an employment experience of 120 hours in a food industry appealing to the student. The student and employer are to strive to give the student as many responsible and varied experiences as possible. Credit will be granted with the employer evaluates and confers with the Foods Department on the student's abilities.

This course will not only give our students additional training but can help the department evaluate its instructional effectiveness. 3 Ut. (0-10), 120 Hrs.
Prerequisites: FP 01, FP 02, FP 03, and FP 04.

FP 06 MANAGEMENT—QUANTITY FOOD PRODUCTION

This course covers purchasing, sanitation, and safety from a management angle. It covers planning, evaluation, purchasing and maintenance of equipment. Also included is the interviewing and training of new trainees. 10 Ut. (4-20), 384 Hrs.
Prerequsites: None.

FP 07 FOOD PREPARATION—FANCY FOODS

This course is included in the Certificate program to give students a chance to develop individual interests in the Food Field. This gives the student an additional three hours a week to work on such projects as; ice carving, cake decorating, hard sugar decoration, artistic signs for food promotions, or seasonal decorations for a dining area and creating new recipes. All these topics are included in regular courses but time does not permit individualism as this course will. 1 Ut. (1-2), 48 Hrs.
Prerequisites: None.

FP 08 QUANTITY FOOD MERCHANDISING

In this course students learn the importance of atmosphere, service, portion sizes, and garnishes for good merchandising. Through practice, students will learn importance of the manager's organization of records for cost controls. There is also emphasis on writing job resumes and factors one should consider for a professional attitude and appearance. 10 Ut. (4-20), 384 Hrs.
Prerequisites: None.

FS 05 QUANTITY FOODS I — THEORY AND PREPARATION TECHNIQUES

Introduction to large volume foods service institutions; emphasis on operational differences; study of food preparation processes; quantitative food preparation; standard recipes; weights and measures; equipment; timing selection, preparation, display, serving foods; sanitary practices. 3 Cr. (2-3).
Prerequisites: None.

FS 15 BASIC FOOD THEORY AND PREPARATION TECHNIQUES

Basic food nutrients and relationship to food preparation; cooking processes: meat, fish, poultry, egg, vegetable, sauce, soup cookery; terms. 2 Cr. (1-3).
Prerequisites: None.

FS 16 INTRODUCTION TO FOOD SERVICE INDUSTRIES

Food service industries: careers available; organizations and management techniques; procedures in food service management; sanitation, safety, state and local health regulations; personal hygiene. 1 Cr. (1-0).
Preprequisites: None.

FS 17 NUTRITION I — HEALTH

History of science of nutrition; food nutrients and their function through digestion and absorption; functions of the body to physical fitness. 3 Cr. (3-0).
Prerequistites: None.

FS 18 NUTRITION II — MENU PLANNING

Nutritional meals for various age groups: economic, cultural, religious patterns; menus for commercial, industrial, school, institutional food services; food preferences of customers; merchandising techniques. 2 Cr. (2-0).
Prerequisites: None.

FS 19 QUANTITY FOODS II — MANAGEMENT THEORY AND PRACTICE

Advanced food service management and production: construction of work schedules, work simplifications, job analysis, labor and food cost controls, use of convenience foods, management of food service operations, supervision and training of personnel, menu planning, purchasing. 3 Cr. (1-6).
Prerequisites: None.

FS 20 FOOD PURCHASING, STORAGE AND SANITATION

Methods of buying, selection, standards and grades; factors influencing prices of meats, fish, poultry, fruits, vegetables; meat identification, meat buying including selection, grading, stamps; common can sizes and units of commercial measure; care of fresh, cooked and frozen meats, fish, poultry, fruits, vegetables; field trips; personal cleanliness, sanitary practices; cause, control and investigation of illnesses caused by food contamination; dishwashing; storage and refrigeration; sanitation of kitchen and equipment; cleansing materials; garbage and refuse disposal. 3 Cr. (3-0).
Prerequisites: None.

FS 22 BEVERAGE MANAGEMENT

Quality as applied to beverages, china, glassware, silver, linens, furnishings, equipment, supplies; purchase specifications, merchandising and management; waiter, waitresses, head waiter, hostess. 2 Cr. (2-0).
Prerequisites: None.

FS 23 FOOD AND BEVERAGE MERCHANDISING

Food and beverage service in food operation; foods work: catering to small parties, preparing unusual entrees, dining room arrangements, artistic production, service to gain customer satisfaction; trade journals, library journals. 2 Cr. (2-0).
Prerequisites: None.

FS 24 EXPERIENCE SEMINAR

Three hours per week, 16 weeks on-the-job training; one hour weekly seminar for discussion of practical experience. 3 Cr. (1-6).
Prerequisites: Two semesters of the program.

FS 25 DIET THERAPY

Diet modifications for the acute and chronically ill. 2 Cr. (2-0).
Prerequisites: None.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

GRAPHIC ARTS DEPARTMENT / Career Programs

JAY HILSHER, Chairman

Associate Degree

GA Graphic Arts

Certificate

PG Printing

SP Sign Painting

GRAPHIC ARTS (GA)

Associate Degree / Two Years

Top salaries are commanded by men in printing and the Graphic Arts Program will provide you with a firm understanding of highly diversified backshop operations along with management, marketing and supervisory training. Practical laboratory work with modern graphic arts equipment will give you a sound background in areas of composition, makeup, photo processes, imposition and stripping, platemaking, presswork and bindery.

Types of Jobs: Graphic arts executive trainees, in-plant supervisors, foremen, self-employed printers, marketing and technical sales' services.

Job Opportunities: Numerous with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
	BM 13	Principles of Business	3	3	0	48
***	BS 09	*Typewriting	1	1	2	48
	ED 01	Mechanical Drawing	2	1	3	64
	GA 10	Reproduction Processes	1	1	1	32
	GA 11	Preparation for Copy Reproduction	3	1	6	112
	GA 12	Principles of Typographic Design	3	1	6	112
	MAT 103	College Algebra	3	4	1	80
	*PE	Physical Education	1	0	2	32
			17	12	21	512

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
	BA 11	Elementary Accounting	3	3	0	48
	GA 20	Photographic Reproduction Processes	1	1	1	
	GA 23	Process Camera	3	1	6	2
	GA 24	Imposition and Stripping	3	1	6	12
	ENG 11	Language and Composition I	3	3	1	4
	MAT 104	Trigonometry	3	4	1	
	*PE	Physical Education	1	0	2	32
			17	13	17	464

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
	GA 30	Printing Reproduction Processes	1	1	1	32
	GA 35	Platemaking Processes	3	1	6	112
	GA 36	Printing Press Operation	3	1	6	112
	IM 31	Supervision-Human Relations	3	3	0	48
	ENG 12	Language and Composition II	3	3	1	64
	PHY 21	Physics-Mechanics	4	3	3	96
			17	12	17	464

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
	CS 03	Introduction to Data Processing	3	3	0	48
	GA 40	Printing Estimating Practices	3	1	6	112
	GA 41	Printing Production Practices	4	1	10	176
	**Elective (General Studies)		3-4	3-4	0	48-64
	**Elective (General Studies)		3-4	3-4	0	48-64
			16-18	11-13	16	432-464

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Electives (General Studies): See page 76 for the applicable list of electives.

***Upon evidence of typing proficiency, this requirement (BS 09) will be waived by Department Chairman.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: Algebra and geometry; one year of science.

PRINTING (PG)

Certificate / Two Years

The Printing Program is designed to train you for the many and complex operations and occupations involved in modern printing. Training emphasis is on the specific occupation for which you show aptitude and interest, but all printing operations are covered to insure your versatility in the field.

Types of Jobs: Cameraman, stripper, layout man, compositor, platemaker, and pressman.

Job Opportunities: Good with excellent starting salaries.

FIRST SEMESTER

Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
BS 09 *Typewriting	1	1	2	48
PG 11 Copy Preparation I	5	2	9	176
PG 12 Typographic Composition I	6	2	12	224
ENG 03 Communications I	3	3	1	64
MAT 10 General Mathematics	3	3	0	48
	18	11	24	560

SECOND SEMESTER

Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
ED 01 Mechanical Drawing	2	1	3	64
PG 23 Photo Process I	5	2	11	208
PG 24 Imposition and Stripping I	5	2	11	208
MAT 20 Algebra	3	3	0	48
	15	8	25	528

THIRD SEMESTER

Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
PG 35 Platemaking I	4	2	6	128
PG 36 Press Operation I	7	2	15	272
ECO 02 Fundamentals of Economics	3	3	0	48
ENG 04 Communications II	3	3	1	64
PHY 20 Physics Survey	3	3	0	48
	20	13	22	560

FOURTH SEMESTER

Course	Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
BM 47 Small Business Management	3	3	0	48
PG 40 Materials of Printing Production	2	2	1	48
**Printing Elective	5	2	10	192
**Printing Elective	5	2	10	192
	15	9	21	480

*Upon evidence of typing proficiency, this requirement (BS 09) may be waived by Department Chairman.

**Electives: PG 41 Copy Preparation II; PG 42 Typographic Composition II; PG 43 Photo Process II; PG 44 Imposition and Stripping II; PG 45 Platemaking II; PG 46 Press Operation II.

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with concurrence of the Dean.

Recommended high school subjects: Two year of mathematics; one year of science.

SIGN PAINTING (SP)

Certificate / Two Years

For the growing, important trade of sign painting, this program will give you practical experiences in lettering skills, design, layout, and type finishings of signs and showcards. Materials, equipment, and safety practices used in painting, building, and sign erection will be stressed. You may specialize in one or two specific fields of this vocation.

Types of Jobs: Self-employment; work with sign painters, bottlers, outdoor advertisers, department stores, theaters, television stations, and truck fleets.

Job Opportunities: Unlimited and fair starting wages with excellent chances for advancement.

FIRST SEMESTER

Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
SP 01 Basic Alphabets	9	1	24	400
ECO 02 Fundamentals of Economics	3	3	0	48
ENG 03 Communications I	3	3	1	64
	15	7	25	512

SECOND SEMESTER

Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
SP 09 Letter Strokes and Showcard Layout	11	3	24	432
ENG 04 Communications II	3	3	1	64
	14	6	25	496

THIRD SEMESTER

Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
SP 03 Commercial Showcards	10	1	27	448
*Electives SP 12 or SP 13	2	1	3	64
	12	2	30	512

FOURTH SEMESTER

Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
SP 04 Commercial Signs	9	1	24	400
BM 47 Small Business Management	3	3	0	48
*Electives SP 13, SP 14	2	1	3	64
	15	5	27	512

*Electives: Enrollment in SP 13 and SP 14 depends upon demonstrated competence in SP 01, SP 09, and to some extent SP 03 and SP 04. Instructors will certify students to enroll.

Qualified certificate students may elect associate degree level related courses upon recommendation of the department and with concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *graphic arts department*

GA 10 REPRODUCTION PROCESSES
Introduction to equipment and materials used in various fields of printing and publishing; desirable qualifications of worker. 1 Cr. (1-1).
Prerequisites: None.

GA 11 PREPARATION FOR COPY REPRODUCTION
Analysis of materials, tools and techniques used in preparation of copy for reproduction; paste-up and color separation overlays. 3 Cr. (1-6).
Prerequisites: None.

GA 12 PRINCIPLES OF TYPOGRAPHIC DESIGN
Training in conventional and modern layouts as applied to solution of problems in printing typography. 3 Cr. (1-6).
Prerequisites: None.

GA 20 PHOTOGRAPHIC REPRODUCTION PROCESSES
Methods of photographic reproduction of engineering drawings, direct image, stabilization process, photo fabrication and microfilming. 1 Cr. (1-1).
Prerequisites: None.

GA 23 PROCESS CAMERA
Concepts and techniques of darkroom procedures for reproduction of line and halftone copy on process cameras. 3 Cr. (1-6).
Prerequisites: None.

GA 24 IMPOSITION AND STRIPPING
Consideration of binding and register requirements to assure quality control of various stripping mediums and formats. 3 Cr. (1-6).
Prerequisites: None.

GA 30 PRINTING REPRODUCTION PROCESSES
Concepts of letterpress, letterset, lithography, intaglio, flexography, gravure and screen process in relation to printing production requirements of graphic arts industry. 1 Cr. (1-1).
Prerequisites: None.

GA 35 PLATEMAKING PROCESSES
Knowledge of deep-etch and surface platemaking processes; preparation, exposure techniques; methods and tools for making corrections; plate troubles, causes, and remedies. 3 Cr. (1-6).
Prerequisites: None.

GA 36 PRINTING PRESS OPERATION
Correlation of printing press operation; ink mixing and matching; registration; preventive maintenance for quality analysis. 3 Cr. (1-6).
Prerequisites: None.

GA 40 PRINTING ESTIMATING PRACTICES
Lab class offering experience in estimating jobs, writing specifications, and planning jobs for production. 3 Cr. (1-6).
Prerequisites: None.

GA 41 PRINTING PRODUCTION PRACTICES
Lab instruction relating to studies in first three semesters; firsthand opportunity to forecast production, route and plan, schedule, dispatch, inspect, control stores and stock; material handling, personnel management and industrial engineering. 4 Cr. (1-10).
Prerequisites: None.

PG 11 COPY PREPARATION I
Analysis of copy; preparation of roughs and working layouts; arrangement and paste-up of art work, photographic and typographic material. 5 Ut. (2-9), 172 Hrs.
Prerequisites: None.

PG 12 TYPOGRAPHIC COMPOSITION I
Fundamentals, application, operation and routine care of composing machines; essentials of copy markup and proofreading. 6 Ut. (2-12), 224 Hrs.
Prerequisites: None.

PG 23 PHOTO PROCESS I
Theory and lab experiences on process cameras for reproduction of line and halftone copy; procedures in processing and contact printing. 5 Ut. (2-11), 208 Hrs.
Prerequisites: None.

PG 24 IMPOSITION AND STRIPPING I
Imposition: theory and practice of folding, binding, and register methods; stripping: procedures and mediums used in

photographic expedients for various formats.
5 Ut. (2-11), 208 Hrs.
Prerequisites: None.

PG 35 PLATEMAKING I

Theory and lab experiences relating to various types of plates and processing procedures; essentials of precise registration. 4 Ut. (2-6),128 Hrs.
Prerequisites: None.

PG 36 PRESS OPERATION I

Theory and lab experiences in preparation and operation of pressroom equipment; essentials of preventive maintenance. 7 Ut. (2-15), 272 Hrs.
Prerequisites: None.

PG 40 MATERIALS OF PRINTING PRODUCTION

Properties of papers and inks used in printing industry; printers' measurements, proportion, percentage; paper sizes and computations used in connection with printing production. 2 Ut. (2-1), 48 Hrs.
Prerequisites: None.

PG 41 COPY PREPARATION II

Advanced copy-fitting and preparation of roughs and working layouts; advanced mechanical assemblies; overlays and pre-separation of color. 5 Ut. (2-10), 192 Hrs.
Prerequisite: PG 11.

PG 42 TYPOGRAPHIC COMPOSITION II

Lab experiences and exercises on photo, cold and hot composition machines; photo-composing of heads and ads; justified text. 5 Ut. (2-10), 192 Hrs.
Prerequisite: PG 12.

PG 43 PHOTO PROCESS II

Advanced theory and lab experiences on process cameras; densitometry, color separation, masking requirements and color proofing systems. 5 Ut. (2-10), 192 Hrs.
Prerequisite: PG 23.

PG 44 IMPOSITION AND STRIPPING II

Imposition: advanced procedures used in pagination; stripping: extension of techniques and procedures in single and multi-color forms. 5 Ut. (2-10), 192 Hrs.
Prerequisite: PG 24.

PG 45 PLATEMAKING II

Advanced course in platemaking procedures for various types of plates and proofing materials; experience providing application of various types of systems to insure register.
5 Ut. (2-10), 192 Hrs.
Prerequisite: PG 35.

PG 46 PRESS OPERATION II

Advanced course in press setup for various formats including work and turn, work and tumble, sheet wise forms, and exercises in four-color process printing. 5 Ut. (2-10), 192 Hrs.
Prerequisite: PG 36.

SP 01 BASIC ALPHABETS

Use and care of sign materials; fundamentals of alphabets; skill in making elements with brush. 9 Ut. (1-24), 400 Hrs.
Prerequisites: None.

SP 03 COMMERCIAL SHOWCARDS

Continuation of thumbnail sketches and showcard layout; emphasis on quality with speed. 10 Ut. (1-27), 448 Hrs.
Prerequisites: SP 01, SP 09.

SP 04 COMMERCIAL SIGNS

Brush techniques in laying out and painting commercial signs, trucks, window lettering; masking; using bulletin colors and spray lacquers. 9 Ut. (1-24), 400 Hrs.
Prerequisites: SP 01, SP 03, SP 09.

SP 09 LETTER STROKES AND SHOWCARD LAYOUT

Continuation of practice in letter strokes; preparation of thumbnail sketches and showcard layout. 11 Ut. (3-24), 438 Hrs.
Prerequisite: SP 01.

SP 12 GOLD LEAF

Preparing surfaces for all types of metallic leaf application; treatment of gold leaf on glass. 2 Ut. (1-3), 64 Hrs.
Prerequisites: SP 01, SP 03, SP 09.

SP 13 SILK SCREEN

Executing layout problems for knife-cut silk screens; running production with one man processor.2 Ut. (1-3), 64 Hrs.
Prerequisites: SP 01, SP 03, SP 09.

SP 14 BILLBOARD PICTORIALS

Enlarging pictorials; mixing paints of different medias; enlargement and painting. 2 (1-3), 64 Hrs.
Prerequisites: None.

SP 09 LETTER STROKES AND SHOWCARD LAYOUT

Continuation of practice in letter strokes; preparation of thumbnail sketches and showcard layout.
11 Ut. (3-24), 438 Hrs.
Prerequisite: SP 01.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

HEALTH OCCUPATIONS DEPARTMENT / Career Programs

THELMA S. MORRIS, Chairman

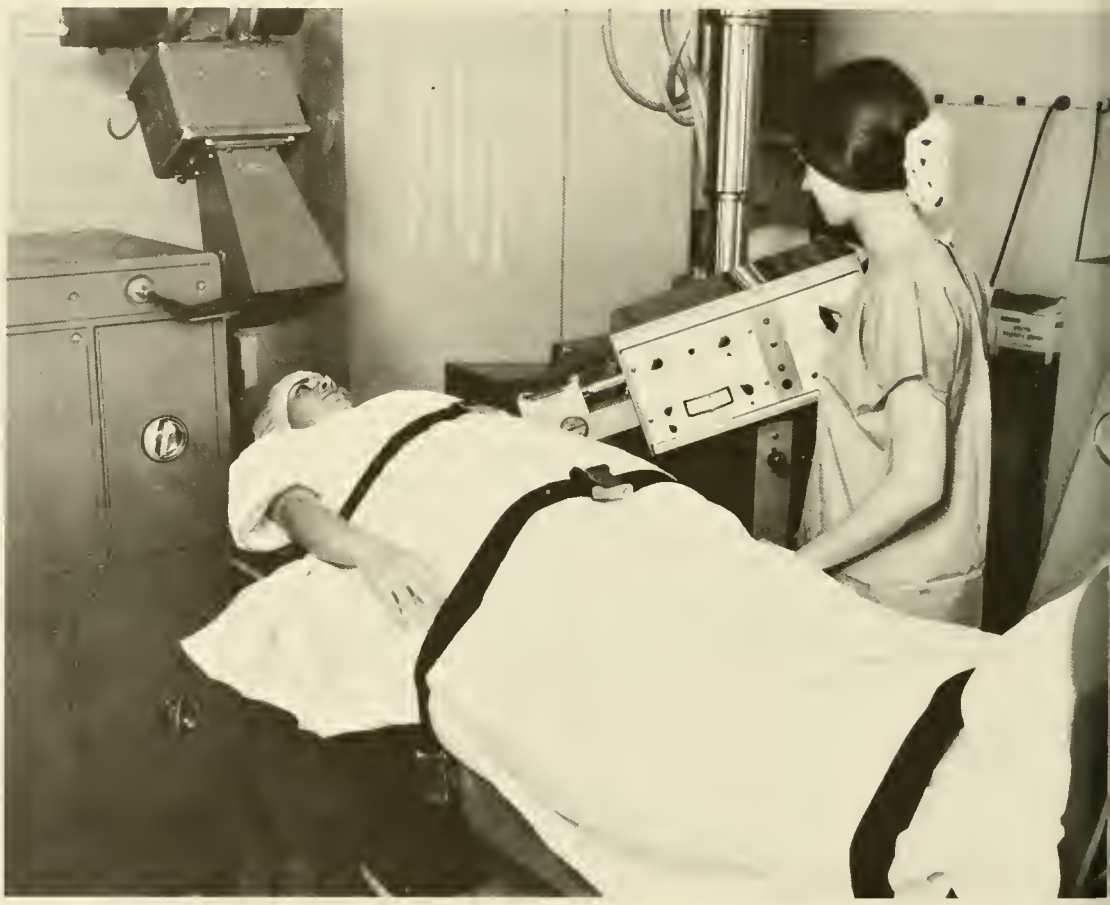
Associate Degree

RT Radiological Technology

Certificate

PN Practical Nursing

OT Operating Room Technician



RADIOLOGICAL TECHNOLOGY (RT)

Associate Degree / Two Years

The formal training for a radiologic technologist will last a minimum of two years. Courses will include anatomy, physiology, physics, medical terminology, professional ethics and radiological equipment and safety. Practical experience with sick and injured patients under qualified technical supervision in local hospitals will be an important aspect of your training.

Types of Jobs: Hospital facilities, doctors and radiologists who maintain private practices, and in civilian and military governmental agencies, or in industry.

Job Opportunities: Good to excellent.

FIRST SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BIO 105	Anatomy and Physiology of Man I	4	3	3	96
ENG 101	English Composition I	3	3	1	64
MAT 103	College Algebra	3	4	1	80
RT 10	Radiological Technology I	5	3	13	256
ST 30	Medical Terminology	3	3	3	48
		18	16	21	544

SECOND SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BIO 106	Anatomy and Physiology of Man II	4	3	3	96
ENG 102	English Composition II	3	3	1	64
MAT 104	Trigonometry	3	4	1	80
RT 11	Radiological Technology II	7	4	16	320
		17	14	21	560

SUMMER SESSION

RT 14	Internship in associated hospitals for twelve weeks	5	0	40	480

THIRD SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
PHY 101	Introductory Physics	4	3	3	96
RT 12	Radiological Technology III	10	5	15	320
**Elective		3	3	0	48
*PE	Physical Education	1	0	2	32
		18	11	20	496

FOURTH SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
PHY 103	Radiation Physics	4	3	3	96
RT 13	Radiological Technology IV	10	5	15	320
SOC 101	General Sociology	3	3	0	48
*PE	Physical Education	1	0	2	32
		18	11	20	496

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Electives: PSY 101 - General Psychology; PSY 205 - Abnormal Psychology; PSY 210 - Social Psychology.

An additional 960 hours of internship are required of the student before being eligible to take the registry exams in order to qualify as a registered radiological technician. Arrangements for this internship will be made with cooperating hospitals. The Associate Degree will be awarded at the completion of the fourth semester, before the internship is served.

PRACTICAL NURSING PROGRAM (PN)

Certificate / 52 Weeks

The Practical Nursing Program will prepare you to provide effective nursing care to the sub-acutely and chronically ill of all ages under supervision, and to assist the professional and technical nurse in the care of the acutely ill patient. Pre-clinical instruction, taught at the College, consists of basic nursing theories and the development of skills that must be applied. Clinical experience under College supervision at both the Divine Providence Hospital and the Williamsport Hospital is provided.

Upon satisfactory completion of the program the graduate is eligible to sit for the Licensed Practical Nurse Examination of the Pennsylvania State Board of Nurse Examiners.

Types of Jobs: Employment in hospitals, convalescent homes, visiting nurses' associations, doctors' offices, private duty.

Job Opportunities: Excellent with steadily increasing salaries.

TERM I – 16 WEEKS

		Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours
PN	01	Personal and Vocational Relationships	2	2	0	32
PN	02	Body Structure and Function	4	4	0	64
PN	03	Personal and Community Health	2	2	0	32
PN	04	The Family	2	2	0	32
PN	05	Nutrition and Diet Therapy	2	2	0	32
PN	06	Nursing Skills-Basic and Advanced	6/9	4/6	8/10	172/256
PN	07	Introduction To Conditions of Illness	2	2	0	32
			20/23	20/22	8/10	416/480

TERM II – 32 WEEKS

		Course	Hours Per Week Lect.	Lab./ Practicum	Total Hours
PN	21	Clinical Experience In The Care of Adult Patients Including Geriatrics		22 Wks.	880
PN	22	Clinical Experience In Maternity Nursing		6 Wks.	240
PN	23	Clinical Experience In Pediatric Nursing		4 Wks.	160
			6 to 7 hrs. Per Wk. (200 Hrs.)	32 Wks.	1280

New students are admitted to this Program in September and March.

Recommended high school subjects: Two years of mathematics and one year of science.

OPERATING ROOM TECHNICIAN (OT)

Certificate / One Year

Completion of this program will enable you to function as a skilled technician whose duties include care, preparation and maintenance of sterile and unsterile supplies, and assisting registered nurses in the preparation of operating rooms for surgery in "scrub in" and "circulating" assignments.

Types of Jobs: Members of surgical teams in hospital operating rooms and central service departments or other areas closely concerned with the principles and practices of surgical asepsis.

Job Opportunities: Good and increasing.

The Operating Room Technician Program follows the recommendations of the Technical Manual compiled by the Association of Operating Room Nurses.

FIRST SEMESTER

		Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
OT	01	Personal and Professional Adjustments	2	2	0	32
OT	02	Body Structure and Function	5	5	0	80
OT	03	Basic Sciences	3	3	0	48
OT	04	Operating Room Techniques	5	5	0	80
OT	05	Operating Room Laboratory	3	0	10	160
ENG	03	Communications I	3	3	1	64
			21	18	11	464

SECOND SEMESTER

		Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
OT	20	Surgical Procedures	5	5	0	80
OT	21	Supervised Clinical Experience	9	0	28	448
			14	5	28	528

Completion of all OT Courses in the First Semester with a grade of "C" or better is required to enter the Second Semester.

New students are admitted to the Operating Room Technician Program in September only.

COURSE DESCRIPTIONS / *health occupations department*

OT 01 PERSONAL AND PROFESSIONAL ADJUSTMENTS

General introduction to the hospital and operating room. History, philosophy and purpose of each, plan and interdepartmental relationships. Job description and qualifications. Legal, moral and religious responsibilities. Personal health and hygiene. Effective study methods. 2 Ut. (2-0), 32 Hrs.
Prerequisites: None.

OT 02 BODY STRUCTURE AND FUNCTION

Basic structure and function of the body. 5 Ut. (5-0), 80 Hrs.
Prerequisites: None.

OT 03 BASIC SCIENCES

History of Asepsis. Principles of Bacteriology as they apply to the sound practice of aseptic technique. Creating and maintaining a sterile field. Knowing the kinds, methods, and mechanics of sterilization of supplies. 3 Ut. (3-0), 48 Hrs.
Prerequisites: None.

OT 04 OPERATING ROOM TECHNIQUES

Principles related to techniques and skills in the operating room. Basic concepts of anesthesiology and safety are incorporated. Good housekeeping skills as they relate to the OR are stressed. 5 Ut. (5-0), 80 Hrs.
Prerequisites: None.

OT 05 OPERATING ROOM LABORATORY

Selected learning experiences referable to the principles outlined in OT 04. 3 Ut. (0-10), 160 Hrs.
Prerequisites: None.

OT 20 SURGICAL PROCEDURES

The diagnosis, of and procedures, positioning, equipment materials and anesthesia used in the various specialties.
5 Ut. (5-0), 80 Hrs.
Prerequisites: None.

OT 21 SUPERVISED CLINICAL EXPERIENCE

Selected learning experiences in the operating room.
9 Ut. (0-28), 448 Hrs.
Prerequisites: First Semester.

PN 01 PERSONAL AND VOCATIONAL RELATIONSHIPS

Orientation, study skills, communications; fundamentals of ethical, psychological, social and human relationships; vocational, legal, religious implications in nursing; nursing history and organizations. 2 Ut. (2-0), 32 Hrs.
Prerequisites: None.

PN 02 BODY STRUCTURE AND FUNCTION

A study of basic human anatomy and physiology as a foundation for safe, intelligent, nursing care and the development of nursing skills; principles of chemistry, microbiology and physics. 4 Ut. (4-0), 64 Hrs.
Prerequisites: None.

PN 03 PERSONAL AND COMMUNITY HEALTH

Study of the fundamental principles related to the maintenance of personal and community health, including public health laws and methods involved in the prevention and control of diseases. 2 Ut. (2-0), 32 Hrs.
Prerequisites: None.

PN 04 THE FAMILY

The family and its function in contemporary society including normal growth and development of the child from birth through adolescence, characteristics of the aging process, and promotion of an environment which is conducive to mental and physical health. 2 Ut. (2-0), 32 Hrs.
Prerequisites: None.

PN 05 NUTRITION AND DIET THERAPY

A study of the body's normal nutrition requirements and the modifications of these requirements during illness.
2 Ut. (2-0), 32 Hrs.
Prerequisites: None.

PN 06 NURSING SKILLS — BASIC AND ADVANCED

Theory and clinical practice in bedside nursing; drugs and solutions; principles underlying nursing skills providing the foundation for safe nursing care for patients of all ages; diversional activities essential to patient's immediate and long-term needs. 6/9 Ut. (4/6-8/10), 192-256 Hrs.
Prerequisites: None.

PN 07 INTRODUCTION TO CONDITIONS OF ILLNESS

A symptomatic approach to illness in which the general deviations from normal body functions are considered together with such nursing problems as may arise from functional disturbances. A study of etiology, pathology, symptomatology, diagnostic procedures and methods of treatment. 2 Ut. (2-0), 32 Hrs.
Prerequisites: None.

PN 21 CLINICAL EXPERIENCE IN THE CARE OF ADULT PATIENTS INCLUDING GERIATRICS

Surgical patients, including recovery room; medical patients, including mental health; observation and experience in physical therapy, central supply and intensive care units; diet and nutrition therapy. Concurrent planned instruction in theory of medical-surgical nursing. 22 Wks. - 880 Hrs.

PN 22 CLINICAL EXPERIENCE IN MATERNITY NURSING

Care of mothers and newborns, including prenatal and postnatal care, experience and observation in labor and delivery, prenatal clinics, mothers' clubs. Thirty hours of concurrent instruction. 6 Wks. - 240 Hrs.

PN 23 CLINICAL EXPERIENCE IN PEDIATRIC NURSING

Nursing care of the child; childhood illnesses. Twenty hours of concurrent instruction. 4 Wks. - 160 Hrs.

RT 10 RADIOLOGICAL TECHNOLOGY I

Basic concept of ethical principles medical structure entailing paramedical profession. Create knowledge in skills of chemical constituents of processing a radiographic film and a thorough knowledge of efficient darkroom (processing) procedure. Gain theoretical, practical instruction applied to radiographic positioning of body structure and organs. Manipulation of exposure factors pertaining to milliamperage, kilovolts, distance and time. 5 Cr. (3-13).

RT 11 RADIOLOGICAL TECHNOLOGY II

Develop, devise thorough knowledge of theory of x-ray technique. Necessity of different radiographic views to maintain different views to avoid superimposition of structure. Acquaint the involvement of contrast media, in retrospect to reactions and contraindications to these medias. Give emphasis on nursing procedures as they correlate to radiology. 7 Cr. (4-16).

RT 12 RADIOLOGICAL TECHNOLOGY III

Create a working combination or establish a new combination of exposure factors using x-ray components to produce an interpretive film. Provide advanced positioning of special radiographic views to demonstrate various anatomical parts. Introduce the operating suite with relationship of medical, aseptic technique, and radiographic procedures. Specialize in highly technical special radiographic procedures and general indication of each. 10 Cr. (5-15).

RT 13 RADIOLOGICAL TECHNOLOGY IV

Knowledge of function, organizational, supervision, legal and financial arrangement related to radiology. Emphasize certain disease, injury, so to intelligently handle an ill or injured patient. Introduce the role of radiation therapy in treatment of disease, effects on body tissue, and methods of employing radiation therapy. Acquire the basic concept of scientific research, planned exploration and stimulate human knowledge to expand their own horizon. 10 Cr. (5-15).

RT 14 SUMMER SESSION

Internship in associated hospitals for twelve weeks.
5 Cr. (0-40).

INDUSTRIAL MANAGEMENT DEPARTMENT / Career Program

EDWARD J. WEST, Chairman

Associate Degree

IM Industrial Management

INDUSTRIAL MANAGEMENT (IM)

Associate Degree / Two Years

The Industrial Management Program is designed to give you a basic understanding of modern theory and practice in effective utilization and control of personnel, materials, and money in the industrial process. The courses provide an opportunity to develop familiarity in the practical application of learned theory. Training in fundamental business and management principles, supplemented by technical skills, will prepare you well for entry positions in operating management or in many administrative areas of industry.

Types of Jobs: Management trainee assistant, supervisor, quality control manager, technician, buyer, production control manager, personnel assistant, time and motion study technician, production planner, maintenance manager, and safety director.

Job Opportunities: Unlimited with excellent starting salaries and better than average opportunity for rapid advancement.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BA	11	Elementary Accounting	3	3	1	64
†BS	09	Typewriting	1	1	2	48
ED	22	Drafting and Sketching	3	2	4	96
IM	13	Introduction to Industrial Management	3	3	0	48
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			17	16	11	432

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
IM	20	Industrial Organization and Management	3	3	0	48
ECO	46	Business Economics	3	3	0	48
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
***Elective			1-5	1-5	0-5	48-112
*PE		Physical Education	1	0	2	32
			14-18	14-18	4-9	320-384

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
IM	31	Supervision-Human Relations	3	3	0	48
IM	41	Industrial and Public Relations	3	3	0	48
PHY	21	Physics-Mechanics	4	3	3	96
MAT	201	Statistical Analysis	3	3	0	48
***Elective			1-5	1-5	0-5	48-112
			14-18	13-17	3-5	288-352

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
CS	03	Introduction to Data Processing	3	3	0	48
IM	40	Work Simplification, Time Study and Incentives	3	3	0	48
IM	42	Production, Quality and Cost Control	2	2	0	32
IM	43	Government and Industry	2	2	0	32
IM	44	Industrial Safety	2	2	1	48
IM	47	Industrial Psychology	3	3	0	48
**Elective (General Studies)			3-4	3-4	0	48-64
			18-19	18-19	1	304-320

†Upon evidence of typing proficiency, this requirement (BS 09) may be waived by Department Chairman.

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Elective (General Studies): See page 76 for the applicable list of electives.

***Electives: EL 15 - Direct Current Fundamentals; EL 16 - Basic Wiring Lab: IM 21 - Wood Processing I; IM 22 - Machine Shop Practice I: ET 21 - Electronics-Theory II; IM 32 - Wood Processing II; IM 34 - Acetylene Welding - Theory and Practice; IM 45 - Electric Welding - Theory and Practice; PHY 22 - Introduction to Metallurgy; IM 46 - Tape Controlled Machine Tools; BM 36 - Marketing; BM 31 - Business Law I; JO 24 - Reading and Comprehension Improvement.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: Algebra and geometry; one year of science.

COURSE DESCRIPTIONS / *industrial management department*

IM 13 INTRODUCTION TO INDUSTRIAL MANAGEMENT

Study of opportunities in industry; structure and operation of proprietorships, partnerships, and corporations; financial problems and policies; operating ethics. 3 Cr. (3-0).
Prerequisites: None.

IM 20 INDUSTRIAL ORGANIZATION AND MANAGEMENT

Structure of proprietorship, partnership, and corporation; methods of establishing and financing; elements or organization; principles of authority, accountability and responsibility; introduction to scientific approach to management decision-making. 3 Cr. (3-0).
Prerequisites: None.

*IM 21 WOOD PROCESSING I

Identification, properties, and application of various wood species; introduction to use, care, and setup of basic tools and equipment of wood processing industry; assembly, gluing, and clamping; shop safety. 3 Cr. (3-0).
Prerequisites: None.

*IM 22 MACHINE SHOP PRACTICE I

Introduction to use, care and setup of basic tools and equipment of machine shop—hand and power—including engine lathe, milling machine, shaper; shop safety. 3 Cr. (3-0).
Prerequisites: None.

IM 31 SUPERVISION – HUMAN RELATIONS

Analysis of concepts of supervision and its iter-personal relationships; recognition of and basic techniques for discharge of supervisory responsibility—planning, organizing, training, motivating, directing, controlling, communicating, and coordinating. 3 Cr. (3-0).
Prerequisites: None.

*IM 32 WOOD PROCESSING II

Production techniques of wood processing industry; jigs and fixtures; use, care and setup of specialty equipment; knife layout and grinding; laminating and bending; finishing. 3 Cr. (3-0).
Prerequisites: None.

*IM 33 MACHINE SHOP PRACTICE II

Advanced work with engine lathe and introduction to use, care and setup of turret lathe and automatic screw machine; production line techniques; quality and time standards. 3 Cr. (3-0).
Prerequisites: None.

*IM 34 ACETYLENE WELDING – THEORY AND PRACTICE

Basic acetylene welding of the five general types of joints in flat, vertical, horizontal and overhead positions; brazing and freehand cutting; production line techniques. 3 Cr. (3-0).
Prerequisites: None.

IM 40 WORK SIMPLIFICATION, TIME STUDY AND INCENTIVES

Manual motions, work place layouts, production job analysis and evaluation; work simplification and time study; establishing work loads; presenting work standards, changes in job content, work loads to employees; piece work rates, bonuses and other incentives. 3 Cr. (3-0).
Prerequisites: None.

IM 41 INDUSTRIAL AND PUBLIC RELATIONS

Trade unions and labor laws; essentials of contract negotiation and interpretation; grievance procedures and arbitration; employee relations applied to welfare, safety, compensation, benefits, job satisfaction; establishing and maintaining company image. 3 Cr. (3-0).
Prerequisites: None.

IM 42 PRODUCTION, QUALITY AND COST CONTROL

Introduction to and application of quantitative approach to management decisions; planning and control concepts; inputs for control systems; PERT: linear programming, budgets, goals and objectives. 2 Cr. (2-0).
Prerequisites: None.

IM 43 GOVERNMENT AND INDUSTRY

History, nature, and scope of governmental role in business environment; study of selected statutes, agencies, and other control and assistance media. 2 Cr. (2-0).
Prerequisites: None.

IM 44 INDUSTRIAL SAFETY

Safety and protection of employees and company property; developing safety-consciousness; nature and recognition of hazards; protective devices and equipment; first aid. 2 Cr. (2-1).
Prerequisites: None.

*IM 45 ELECTRIC WELDING – THEORY AND PRACTICE

Basic electric welding of general types of joints with different types and sizes of electrodes; electric welding on production line. 3 Cr. (3-0).
Prerequisites: None.

*IM 46 TAPE CONTROLLED MACHINE TOOLS

Theory of application of tape control to machine tools and production process: present and future. 3 Cr. (3-0).
Prerequisites: None.

IM 47 INDUSTRIAL PSYCHOLOGY

Study of individual differences in industry; analysis of human needs and morale; selecting, testing, training, and motivating employees; evaluating and improving personal effectiveness; factors affecting employee efficiency and safety. 3 Cr. (3-0).
Prerequisites: None.

*When enrollment is sufficient, instruction specifically designed to meet Industrial Management requirements is provided by the Building Construction, Machine Shop, and Welding departments.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

JOURNALISM AND BROADCASTING DEPARTMENT / Career Programs

Associate Degree

BR Broadcasting
JO Journalism

BROADCASTING (BR)

Associate Degree / Two Years

Broadcasting is a world of instant news. This may be the field for you. As a radio announcer you will be in a key position in the field of communications. Announcers and newsmen from nearby radio stations will teach modern broadcasting techniques using the College's radio studio and closed-circuit television system. Background courses in history, government, economics, sociology, and psychology will enrich you and give you a head start if you should wish to seek a baccalaureate degree later.

Types of Jobs: Radio announcer, disc jockey, news commentator, public relations assistant, advertising copywriter.

Job Opportunities: Unlimited. Radio stations throughout the state are looking for qualified broadcasters, and opportunities for advancement in both radio and television are excellent.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BS	15	Typewriting I	3	2	3	80
JO	20	News Writing	2	2	2	64
JO	24	Reading and Comprehension Improvement	1	1	2	48
ENG	101	English Composition I	3	3	1	64
ENG	211	Fundamentals of Speech	3	3	0	48
GOV	201	American Government - National	3	3	0	48
			15	14	8	384

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BR	11	Basic Electronics and FCC Licensing	2	1	4	80
BR	18	Introduction to Announcing	2	1	4	80
BR	21	In-Service Training I	2	0	6	96
GOV	202	State and Local Government	3	3	0	48
HIS	202	United States - Survey II	3	3	0	48
SOC	101	Introduction to Sociology	3	3	0	48
			17	11	16	432

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BR	16	Advanced Announcing	2	1	4	80
BR	17	Radio Programming	2	1	4	80
BR	22	In-Service Training II	2	0	6	96
JO	15	Fine Arts Seminar	1	1	0	16
ECO	201	Principles of Economics	3	3	0	48
**Elective			3-4	3-4	0-3	48-96
*PE		Physical Education	1	0	2	32
			14-15	9-10	16-19	400-448

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BR	14	Station Management and Community Responsibility	3	3	0	48
BR	19	Broadcast Advertising - Local and National	2	1	4	80
BR	23	In-Service Training III	2	0	6	96
JO	18	Science Seminar	1	1	0	16
PSY	101	General Psychology	3	3	0	48
**Elective			3-4	3-4	0-3	48-96
*PE		Physical Education	1	0	2	32
			15-16	11-12	12-15	368-400

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**To be taken in the School of Liberal Arts and Sciences.

Students taking Journalism and Broadcasting must take College Boards.

Students receiving a 3.0 or better average in their first year may take special electives with the Dean's permission.

Recommended high school subjects and activities: Speech, broadcasting, journalism, drama, and student publications.

JOURNALISM (JO)

Associate Degree / Two Years

You will find that the Journalism Program emphasizes a "central core" of practical courses in news and feature story writing, news photography, editing, copywriting, and community responsibility, all taught by practicing newsmen in the area. To aid you as a future newsman, background courses in history, government, economics, sociology, and psychology are included in the program. Also, if you should wish to seek a baccalaureate degree at a later date, the liberal arts background courses are fully transferable to four-year institutions.

Types of Jobs: Newspaper reporter, advertising copywriter, public relations assistant, news photographer, magazine research assistant.

Job Opportunities: Newspapers throughout the state and nation need qualified newsmen, and opportunities for advancement are excellent.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BS	15	Typewriting I	3	2	3	80
JO	20	News Writing	2	2	2	64
JO	24	Reading and Comprehension Improvement	1	1	2	48
ENG	101	English Composition I	3	3	1	64
ENG	211	Fundamentals of Speech	3	3	0	48
GOV	201	American Government - National	3	3	0	48
			15	14	8	384

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
JO	21	In-Service Training I	2	0	6	96
JO	25	Photography for Newsmen	1	0	5	80
JO	26	News Reporting	2	2	2	64
GOV	202	State and Local Government	3	3	0	48
HIS	202	United States-Survey II	3	3	0	48
SOC	101	Introduction to Sociology	3	3	0	48
			14	11	13	384

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
JO	15	Fine Arts Seminar	1	1	0	16
JO	22	In-Service Training II (Advanced)	2	0	6	96
JO	27	Feature Writing	2	1	4	80
JO	28	Editing	2	1	4	80
ECO	201	Principles of Economics	3	3	0	48
**Elective			3-4	3-4	0-3	48-96
*PE		Physical Education	1	0	2	32
			14-15	9-10	16-19	400-448

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
JO	16	Newspaper Management and Community Responsibility	3	3	0	48
JO	18	Science Seminar	1	1	0	16
JO	23	In-Service Training III (Advanced)	2	0	6	96
JO	29	Advertising - Basic Layouts	2	1	4	80
PSY	101	General Psychology	3	3	0	48
**Elective			3-4	3-4	0-3	48-96
*PE		Physical Education	1	0	2	32
			15-16	11-12	12-15	368-400

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**To be taken in the School of Liberal Arts and Sciences.

Students taking Journalism and Broadcasting must take College Boards.

Students receiving a 3.0 or better average in their first year may take special electives with the Dean's permission.

Recommended high school subjects and activities: Speech, broadcasting, journalism, drama, and student publications.

COURSE DESCRIPTIONS / *journalism & broadcasting department*

BR 11 BASIC ELECTRONICS AND FCC LICENSING

Fundamental mechanics of operation of tape recorders, turntables, network facilities, and multispeaker systems; mechanics necessary to obtain FCC licensing; field visits to at least five different stations. 2 Cr. (1-4).
Prerequisites: None.

BR 14 STATION MANAGEMENT AND COMMUNITY RESPONSIBILITY

Study of problems related to serving community needs while making a profit; ratio of advertising to program time; character of station; meeting community responsibility through community interest programs; responsible use of editorial privilege. 3 Cr. (3-0).
Prerequisites: None.

BR 16 ADVANCED ANNOUNCING

Special techniques employed in sports announcing, "talk" programs, and interviews; lab practice; practice on College audio-visual equipment 2 Cr. (1-4).
Prerequisites: None.

BR 17 RADIO PROGRAMMING

Determining basic character of a station; setting up a program to meet objectives; use of "public interest" programs and national, state, and local news to meet FCC requirements; maintaining balance between "talk" and "music" programs. 2 Cr. (1-4).
Prerequisites: None.

BR 18 INTRODUCTION TO ANNOUNCING

Principles of announcing; practice in reading, voice inflecting, pronunciation of foreign names, and similar exercises; use of tape recorder in pre-recording repetitive items; lab instruction. 2 Cr. (1-4).
Prerequisites: None.

BR 19 BROADCAST ADVERTISING — LOCAL AND NATIONAL

Techniques of creating effective advertising by correlating the seller and product with the most likely buyer; selection of time, type, and method of presentation; use of correlated national advertising. 2 Cr. (1-4).
Prerequisites: None.

BR 21 IN-SERVICE TRAINING I

Supervised work with the Office of College Information in the preparation of typed news releases for local radio stations, or assignments to the College's closed-circuit television production teams. 2 Cr. (0-6).
Prerequisites: None

BR 22 IN-SERVICE TRAINING II

Advanced work with the Office of College Information in the preparation of "public service" programs for local radio stations, or more responsible assignments on closed-circuit television. 2 Cr. (0-6).
Prerequisites: None.

BR 23 IN-SERVICE TRAINING III

Major assignments with the Office of College Information or the audio-visual closed-circuit television system including the total preparation of at least one program from conception to final production. 2 Cr. (0-6).
Prerequisites: None.

JO 15 FINE ARTS SEMINAR

Eight two-hour lecture-discussion sessions conducted by visiting lecturers; may include art of the masters, modern art, sculpture, modern dance, opera, classical music, related areas. 1 Cr. (1-0).
Prerequisites: None.

JO 16 NEWSPAPER MANAGEMENT AND COMMUNITY RESPONSIBILITY

Inter-relation of news management, advertising, editorial policy, and community responsibility. 3 Cr. (3-0).
Prerequisites: None.

JO 18 SCIENCE SEMINAR

Eight two-hour lecture-discussion sessions conducted by visiting lecturers; may include peaceful use of atomic power, stream pollution, air pollution, space exploration, undersea exploration, related areas. 1 Cr. (1-0).
Prerequisites: None.

JO 20 NEWS WRITING

Incorporating the "Who?-What?-Why?-When?-How?- technique into news stories for radio and newspapers; two-hour lab where two or more typical news stories are written to meet "deadlines." 2 Cr. (2-2).
Prerequisites: None.

JO 21 IN-SERVICE TRAINING

Supervised, on-the-job training with the Office of College Information or on the staff of student publications. 2 Cr. (0-6).
Prerequisites: None.

JO 22 IN-SERVICE TRAINING (ADVANCED)

On-the-job training in the Office of College Information or on the staff of student publications. Students must have demonstrated the ability to handle writing assignments with minimum supervision. 2 Cr. (0-6).
Prerequisites: None.

JO 23 IN-SERVICE TRAINING (ADVANCED)

Editorial responsibilities on student publications or substantial assignments with the Office of College Information requiring initiative and proficiency. 2 Cr. (0-6).
Prerequisites: None.

JO 24 READING AND COMPREHENSION IMPROVEMENT

Practice designed to help students improve reading habits and remember ideas and details: previewing, skimming, paragraph reading, outlining. 1 Cr. (1-2).
Prerequisites: None.

JO 25 PHOTOGRAPHY FOR NEWSMEN

Creating effective pictures for news stories and advertising; camera and darkroom techniques; lab practice. 1 Cr. (0-5).
Prerequisites: None.

JO 26 NEWS REPORTING

News reporting peculiar to newspapers; prosaic hospital news, obituaries, rural correspondents' stories, social news, police stories, court house sources; timeliness and accuracy. 2 Cr. (2-2).
Prerequisites: None.

JO 27 FEATURE WRITING

Techniques of employing reader analysis, research, in-depth interviews, photography, and graphic writing skills in feature and editorial preparation; lab practice. 2 Cr. (1-4).
Prerequisites: None.

JO 28 EDITING

Techniques of editing material for newspapers, magazines, and other publications; headline writing; copyreading; layout and typography; printing processes; lab practice. 2 Cr. (1-4).
Prerequisites: None.

JO 29 ADVERTISING-BASIC LAYOUTS

Techniques of preparing and integrating advertising copy with pertinent illustrations in attractive format; lab practice. 2 Cr. (1-4).
Prerequisites: None.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

LIBRARY SCIENCE DEPARTMENT / Career Program

Associate Degree

LS Library Assistant

LIBRARY ASSISTANT (LS)

Associate Degree / Two Years

The Library Assistant Program will prepare you for an interesting and challenging career in library work. It will make available to you positions in various types of libraries as an aide to the professional librarian. Practical experience in library work through the internship program, lectures, and related arts courses will qualify you to advance professionally.

Types of Jobs: Positions in public and special libraries; schools, colleges, and related firms.

Job Opportunities: Your specialized knowledge and skill will merit an above-average starting salary, and the growing need for qualified people in the library field will prepare you for immediate employment.

FIRST SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
LS 10	Introduction to Libraries and Books	3	3	0	48
LS 11	Internship I	3	0	9	144
LS 15	Technical Services I	3	2	3	80
†BS 15	Typewriting I	3	2	3	80
CSC 101	Intro. to Computer Science	3	3	1	64
ENG 101	English Composition I	3	3	1	64
		18	13	17	480

SECOND SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
LS 21	Internship II	3	0	9	144
LS 30	Technical Services II	3	2	3	80
LS 41	Introduction to Reference	3	3	0	48
BS 21	Typewriting II	3	2	3	80
HIS 103	Western Civilization I	3	3	0	48
ENG 102	English Composition II	3	3	1	64
		18	13	16	464

THIRD SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
LS 31	Aids and Principles of Book Selection and Bibliography	3	3	0	48
EDU 102	Children's and Young Adults' Literature	3	3	0	48
ENG 250	World Literature I	3	3	0	48
PSY 101	General Psychology	3	3	0	48
**Elective		3-4	3-4	0-3	48-96
*PE	Physical Education	1	0	2	32
		16-17	15-16	2-5	272-320

FOURTH SEMESTER

	Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
LS 40	Books and Writers in Literature and Science	3	3	0	48
LS 42	Audio-Visual Materials	2	2	0	32
LS 44	The Library: Its Patrons and Purpose	3	3	0	48
BS 23	Office Practices	2	2	1	48
ENG 251	World Literature II	3	3	0	48
**Elective (Foreign Language or Science)		3-4	3-4	0-3	48-96
*PE	Physical Education	1	0	2	32
		17-18	16-17	3-6	304-354

†Upon evidence of typing proficiency, this requirement (BS 09) may be waived by Department Chairman.

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**From Liberal Arts and Sciences.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: One year of mathematics; one year of science.

COURSE DESCRIPTIONS / *library science department*

LS 10 INTRODUCTION TO LIBRARIES AND BOOKS
Survey of historical development of books, libraries, and librarianship: evolution of alphabet; early forms of books; libraries in ancient world; middle ages and modern times; invention of printing. 3 Cr. (3-0).
Prerequisites: None.

LS 11 INTERNSHIP I
Practical experience in library activities: circulation, reference, acquisition; work in service areas: adult, children, reference, extension programs, bookmobile; observation made to determine area best suited for student. 3 Cr. (0-9).
Prerequisites: None.

LS 15 TECHNICAL SERVICES I
Theory and experience in tasks in general area of technical services: cataloging and classification, mechanical preparation of material, acquisition of material, maintenance of library material, book stock control, preparation for bindery. 3 Cr. (2-3).
Prerequisites: None.

LS 21 INTERNSHIP II
Practical experience in library activities: circulation, reference, acquisition; work in service area: adult, children, reference, extension programs, bookmobile; observation made to determine area best suited for student. 3 Cr. (0-9).
Prerequisites: None.

LS 30 TECHNICAL SERVICES II
Theory and experience in tasks in general area of technical services: cataloging and classification, mechanical preparation of material, acquisition of material, maintenance of library material, book stock control, preparation for bindery. 3 Cr. (2-3).
Prerequisites: None.

LS 31 AIDS AND PRINCIPLES OF BOOK SELECTION AND BIBLIOGRAPHY
Introduction to principles of selection; basic aids and reference tools used; evaluation of a library's material in relation to its public. 3 Cr. (3-0).
Prerequisites: None.

LS 40 BOOKS AND WRITERS IN LITERATURE AND SCIENCE
Survey of major periods in history of world literature; familiarization with individual writers. 3 Cr. (3-0).
Prerequisites: None.

LS 41 INTRODUCTION TO REFERENCE
Philosophy and techniques of reference work; use of basic reference materials. 3 Cr. (3-0).
Prerequisites: None.

LS 42 AUDIO-VISUAL MATERIALS
Use of library film, recordings, duplicating devices and projection equipment. 2 Cr. (2-0).
Prerequisites: None.

LS 44 THE LIBRARY: ITS PATRONS AND PURPOSE
Examination of social relationships of library and library worker to patrons, community, country, college campus, public schools. 3 Cr. (3-0).
Prerequisites: None.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

MACHINE SHOP DEPARTMENT / Career Programs

EARL L. PARRISH, Chairman

Associate Degree

TT Toolmaking Technology

Certificate

MG Machinist General

SM Sheet Metal

TOOLMAKING TECHNOLOGY (TT)

Associate Degree / Two Years

The Toolmaking Technology Program will prepare you to work with the engineer and shop superintendent or foreman. To ensure your efficiency, time will be spent in the lab or shop where you will be trained to develop machine operation skills. Emphasis will be given to laboratory or shop work where you will be trained in machine operation. Emphasis will also be placed on theory, blue print reading, and mechanical drawing. Routing of jobs and the sequence of operations, as well as related courses in mathematics, science, and economics are included to increase your advancement opportunities.

Types of Jobs: Toolmaker; experimental, numerical controller; production technician; administrative assistant.

Job Opportunities: Unlimited with excellent starting salaries and rapid advancement.

FIRST SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
TT	10	Bench/Drill Press	2	1	3	64
TT	11	Engine Lathe I	4	2	6	128
TT	12	Milling Machine I	4	2	6	128
TT	13	Shaper	1	0	3	48
ENG	11	Language and Composition I	3	3	1	64
MAT	103	College Algebra	3	4	1	80
*PE		Physical Education	1	0	2	32
			18	12	22	544

SECOND SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
ED	01	Mechanical Drawing	2	1	3	64
TT	20	Turret Lathe/Automatic Screw Machine	4	2	7	128
TT	21	Quality Control/Blueprint Reading	4	2	6	128
ENG	12	Language and Composition II	3	3	1	64
MAT	104	Trigonometry	3	4	1	80
*PE		Physical Education	1	0	2	32
			17	12	20	496

THIRD SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
TT	30	Bench/Jig Borer	2	1	5	96
TT	31	Engine Lathe II	4	2	6	128
TT	32	Milling Machine II	4	2	6	128
ECO	11	Basic Economics	3	3	0	48
PHY	21	Physics-Mechanics	4	3	3	96
			17	11	20	496

FOURTH SEMESTER

		Course	Cr.	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
TT	40	Grinding Machines	7	2	15	272
TT	23	Heat Treating	3	1	8	144
PHY	22	Introduction to Metallurgy	4	4	0	64
**Elective (General Studies)			3-4	3-4	0	48-64
			17-18	10-11	23	528-544

*Males: PE 105, 106, 107, 108
Females: PE 115, 116, 117, 118

**Electives (General Studies): See page 76 for the applicable list of electives.

Qualified associate degree students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit upon recommendation of the department chairman and with the concurrence of the Deans.

Required high school subjects: One year of mathematics; one year of science.

MACHINIST GENERAL (MG)

Certificate / Two Years

The Machinist General Program offers you training on machine tools that are common to most shops and emphasizes skill with machines as well as general education subjects. Classroom analysis of various jobs and machine operations will increase your capabilities as a machinist. Mathematics, science, and communications skills are included to help you meet the demands of modern technical developments and to prepare you for career advancement.

Types of Jobs: Machinist, machine repair mechanic, setup man for production line work, skilled tool-room mechanic.

Job Opportunities: Never have the opportunities been so great for men trained in the mechanical field; jobs are available nationally with excellent starting salaries and unlimited chances for advancement.

FIRST SEMESTER

Course		Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
MG 10	Basic Machine Shop I	5	2	11	208
MG 15	Basic Machine Shop II	5	2	11	208
ENG 03	Communications I	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		16	10	23	528

SECOND SEMESTER

Course		Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
MG 20	Basic Machine Shop III	5	2	11	208
MG 21	Basic Machine Shop IV	5	2	11	208
ENG 04	Communications II	3	3	1	64
MAT 20	Algebra	3	3	0	48
		16	10	23	528

THIRD SEMESTER

Course		Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
MG 30	Advanced Machine Shop I	5	2	11	208
MG 31	Advanced Machine Shop II	5	2	11	208
PHY 20	Physics Survey	3	3	0	48
BM 47	Small Business Management	3	3	0	48
		16	10	22	512

FOURTH SEMESTER

Course		Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
MG 40	Advanced Machine Shop III	5	2	11	208
MG 41	Advanced Machine Shop IV	5	2	11	208
ED 01	Mechanical Drawing	1	1	3	64
ECO 02	Fundamentals of Economics	3	3	0	48
		14	8	25	528

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with the concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

SHEET METAL (SM)

Certificate / Two Years

The Sheet Metal Program places stress upon the principles and practices of modern metal working equipment. Fundamentals of the trade coupled with some general education background courses will provide you opportunity for advancements.

Types of Jobs: Employment in various phases of sheet metal work including the service trades, heating, ventilation, air-conditioning, manufacturing, construction, shipbuilding; or self-employment.

Job Opportunities: Excellent with good starting wages.

FIRST SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
SM 10	Basic Sheet Metal (Hand/Machine)	11	5	20	400
ENG 03	Communications I	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		17	11	21	512

SECOND SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
SM 20	Intermediate Processes	11	5	20	400
ENG 04	Communications II	3	3	1	64
MAT 20	Algebra	3	3	0	48
		17	11	21	512

THIRD SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
SM 30	Basic Commercial Sheet Metal	11	5	20	400
ECO 02	Fundamentals of Economics	3	3	0	48
		14	8	20	448

FOURTH SEMESTER

	Course	Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BM 47	Small Business Management	3	3	0	48
SM 40	Commercial Sheet Metal	11	5	20	400
PHY 20	Physics Survey	3	3	0	48
		17	11	20	496

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of drafting.

COURSE DESCRIPTIONS / *machine shop department*

MG 10 BASIC MACHINE SHOP I

Theory and practice of elementary bench work; use of hand tools; operation and care of drill press, shaper and elementary blueprint reading. 5 Ut. (2-11), 208 Hrs
Prerequisites: None.

MG 15 BASIC MACHINE SHOP II

Engine Lathe and Milling Machine; Basic machining operations on the lathe and milling machine with emphasis placed on safety and care of the machines 2 Ut. (2-11), 208 Hrs.
Prerequisites: None.

MG 20 BASIC MACHINE SHOP III

Care and sequence of operations; turret lathes and automatic screw machines. 5 Ut. (2-11), 208 Hrs.
Prerequisites: None.

MG 21 BASIC MACHINE SHOP IV

Use and care of precision measuring equipment; advanced blueprint reading; freehand sketching and inspection practices. 5 Ut. (2-11), 208 Hrs.
Prerequisites: None.

MG 30 ADVANCED MACHINE SHOP I

Advanced training on drill press, engine lathe milling machine and shaper, with emphasis on indexing, gear cutting and precision boring. 5 Ut. (2-11), 208 Hrs.
Prerequisites: None.

MG 31 ADVANCED MACHINE SHOP II

Advanced training on drill press, engine lathe, milling machine and shaper; with emphasis on precision boring and die making. 5 Ut. (2-11), 208 Hrs.
Prerequisites: None.

MG 40 ADVANCED MACHINE SHOP III

Use of grinding machines for cylindrical, internal and surface grinding. 5 Ut. (2-11), 208 Hrs.
Prerequisites: None.

MG 41 ADVANCED MACHINE SHOP IV

Theory and practices of thread and tool and cutter grinders; with various phases of heat treating; normalizing, carburizing annealing and hardening and tempering of various tool steels. 5 Ut. (2-11), 208 Hrs.
Prerequisites: None.

SM 10 BASIC SHEET METAL (HAND/MACHINE)

Introduction to sheet metal working tools, metals, techniques and safety regulations; instruction in related drafting and mathematics; accuracy in interpreting elementary blueprints; resistance welding. 11 Ut. (5-20), 400 Hrs.
Prerequisites: None.

SM 20 INTERMEDIATE PROCESSES

Practical pattern drafting, including heating, air-conditioning and ventilation; construction principles and practices; roofing, spouting and flashing; related drafting instruction; live work from planning stage to completion. 11 Ut. (5-20), 400 Hrs.
Prerequisites: None.

SM 30 BASIC COMMERCIAL SHEET METAL

Basic welding procedures for light metals; use and care of equipment; fabrication and repair of commercial equipment; ornamental sheet metal work; press working techniques; instruction to more costly metals; spray painting.
11 Ut. (5-20), 400 Hrs.
Prerequisites: None.

SM 40 COMMERCIAL SHEET METAL

Introduction, theory and techniques of basic processes in plastics; principles, design, and fabrication of industrial and residential ventilation; precision layout; working to close tolerances; advanced theory on commercial sheet metal and work on power-driven machinery. 11 Ut. (5-20), 400 Hrs.
Prerequisites: None.

TT 04 ELEMENTARY MACHINE SHOP I

Elementary machine operation: bench, drill press, shaper, engine lathe, milling machines. 3 Cr. (2-4).
Prerequisites: None.

TT 05 ELEMENTARY MACHINE SHOP II

Theory, setup and operation of turret lathes and automatic screw machines; introduction to quality control; use of precision instruments. 3 Cr. (2-4).
Prerequisites: None.

TT 06 ELEMENTARY MACHINE SHOP III

Theory and practice of grinding machines and wheels; cylindrical, internal and surface grinding; introduction to heat treating. 3 Cr. (2-4).
Prerequisites: None.

TT 10 BENCH/DRILL PRESS

Use of hand tools to produce layouts and objects by hand; simple filing, sawing, assembling; types of drill presses; drill sharpening; drilling to a layout; drill jigs. 2 Cr. (1-3).
Prerequisites: None.

TT 11 ENGINE LATHE I

Theory and tool bit grinding; turning; facing; boring; thread cutting. 4 Cr. (2-6).
Prerequisites: None.

TT 12 MILLING MACHINE I

Practice in end, slab, and straddle milling; all types of straight and plain milling. 4 Cr. (2-6).
Prerequisites: None.

TT 13 SHAPER

Producing parallel and square surfaces; shaping rectangular objects. 1 Cr. (0-3).
Prerequisites: None.

TT 20 TURRET LATHE/AUTO. SCREW MACHINES

Theory, setup and operation of machines; sequence of operations and tooling; cam development. 4 Cr. (2-7).
Prerequisites: None.

TT 21 QUALITY CONTROL/BLUEPRINT READING

Use of precision instruments; reading mechanical drawings; controlling quality of work by sampling method. 4 Cr. (2-6).
Prerequisites: None.

TT 23 HEAT TREATING

Theory and practice in normalizing, carburizing, hardening, and tempering of various types of steel; heat treatment of metals. 3 Cr. (1-8).
Prerequisites: None.

TT 30 BENCH/JIG BORER

Theory and practice in advanced precision filing; fitting, lapping, and assembling of precision parts required on dies, jigs and fixtures; boring holes to very close dimensions and locations, using micrometer measuring instruments on machines. 2 Cr. (1-5).
Prerequisites: None.

TT 31 ENGINE LATHE II

Theory and practice in advanced turning and face plate work; thread cutting of all types; taper work. 4 Cr. (2-6).
Prerequisites: None.

TT 32 MILLING MACHINE II

Theory and practice in producing spur, helical and bevel gears; indexing, spiral and cam milling; milling punches and dies. 4 Cr. (2-6).
Prerequisites: None.

TT 40 GRINDING MACHINES

Theory and practice in cylindrical, internal, surface, tool and cutter grinding; thread grinding of studs, taps; special threads. 7 Cr. (2-15).
Prerequisites: None.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

OFFICE MACHINE REPAIR DEPARTMENT / Career Program

GEORGE W. GESLER, Chairman

Certificate
OR Office Machine Repairman

OFFICE MACHINE REPAIPMAN (OR)

Certificate / Two Years

This program will train you to perform periodic inspections and to make repairs on different types of office equipment. Related courses such as mathematics, typing, and economics will give you a well-rounded background for advancements in this field. (If you have a physical handicap, you may find this field to be a solution to your vocational need.)

Types of Jobs: Typewriter, adding machine, duplicator serviceman; manufacturers' service representative; shop foreman in distributor outlet; branch service manager for company owned shop; self-employment.

Job Opportunities: There is an ever increasing demand for personnel to service and repair all types of office equipment; salary rating good to excellent depending on complexity of equipment.

FIRST SEMESTER

Course		Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
BS 09	*Typewriting	1	1	2	48
OR 11	Office Machine Repair I	10	2	24	416
ENG 03	Communications I	3	3	1	64
		14	6	27	528

SECOND SEMESTER

Course		Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
OR 21	Office Machine Repair II	10	2	24	416
ENG 04	Communications II	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		16	8	25	528

THIRD SEMESTER

Course		Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
OR 31	Office Machine Repair III	10	2	24	416
MAT 20	Algebra	3	3	0	48
ECO 02	Basic Economics	3	3	0	48
		16	8	24	512

FOURTH SEMESTER

Course		Units	Hours Per Week Lect.	Lab./ Practicum	Total Hours Sem.
OR 42	Office Machine Repair IV	10	2	24	416
BM 47	Small Business Management	3	3	0	48
PHY 20	Physics Survey	3	3	0	48
		16	8	24	512

*Upon evidence of typing proficiency, this requirement (BS 09) may be waived by Department Chairman.

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with the concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *office machine repair department*

OR 11 OFFICE MACHINE REPAIR I

Typewriter operation; functional testing; trade history; machine development, rubber parts, ribbons; machine models; training to perform periodic preventive maintenance inspections. 10 Ut. (2-24), 416 Hrs.
Prerequisites: None.

OR 21 OFFICE MACHINE REPAIR II

Analysis of typewriter sections and understanding of components; disassembly and reassembly of machines to develop manipulative skills; trade procedures and job standards; drive, power roll, type action, and controlled operations of electric typewriters. 10 Ut. (2-24), 416 Hrs.
Prerequisites: None.

OR 31 . OFFICE MACHINE REPAIR III

History, business use, and sectional components of adding machines; operation and testing of ten-key and full keyboard adding machines; servicing, adjusting, and repair of mechanical problems. 10 Ut. (2-24), 416 Hrs.
Prerequisites: None.

OR 42 OFFICE MACHINE REPAIR IV

Stencil duplicating arts; duplicator operation and service; introduction to office copiers; office machine business management program. 10 Ut. (2-24), 416 Hrs.
Prerequisites: None.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

WELDING DEPARTMENT / Career Program

BERNARD C. WILLIAMS, Chairman

Certificate

WE Welding

WELDING (WE)

Certificate / Two Years

Through emphasis placed on theory and manipulative skills, the Welding Certificate Program will prepare you as a competent craftsman. Through stress on developments and techniques in electric, oxy-acetylene and inert gas shielded methods of welding, you will gain recognized proficiency.

Types of Jobs: Welder, welder operator, fitter, specialist, foreman, supervisor and inspector.

Job Opportunities: Unlimited with good starting rates and advancement potential.

FIRST SEMESTER

Course		Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
WE 11	Acetylene Welding	9	1	25	416
ENG 03	Communications I	3	3	1	64
MAT 10	General Mathematics	3	3	0	48
		15	7	26	528

SECOND SEMESTER

Course		Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
ED 05	Blueprint Reading	1	0	3	48
WE 12	Electric Welding	8	1	21	352
ENG 04	Communications II	3	3	1	64
MAT 20	Algebra	3	3	0	48
		15	7	25	512

THIRD SEMESTER

Course		Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
WE 13	Inert Gas Welding	9	1	25	416
BM 47	Small Business Management	3	3	0	48
		12	4	25	464

FOURTH SEMESTER

Course		Units	Hours Per Week Lect.	Hours Per Week Lab./ Practicum	Total Hours Sem.
WE 14	Welding (Advanced)	9	1	25	416
ECO 02	Fundamentals of Economics	3	3	0	48
PHY 20	Physics Survey	3	3	0	48
		15	7	25	512

Qualified certificate students may elect associate degree level related courses upon recommendation of the department chairman and with the concurrence of the Dean.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *welding department*

WE 01 ACETYLENE WELDING
Selected units in basic acetylene welding for plumbing students. 1 Ut. (0-5); 80 Hrs.
Prerequisites: None.

WE 02 ELECTRIC WELDING
Selected units in basic electric welding for plumbing students. 1 Ut. (0-5), 80 Hrs.
Prerequisites: None.

WE 11 ACETYLENE WELDING
Theory and practice welding of sheet metal and mild steel plate; oxy-acetylene cutting; pipe welding; welding and brazing of ferrous and non-ferrous metals; weld testing; shop safety. 9 Ut. (1-25), 416 Hrs.
Prerequisites: None.

WE 12 ELECTRIC WELDING
Principles and applications of basic electric welding using various types of electrodes for welding of steel plate in all positions; pipe welding; cast iron welding; weld testing. 8 Ut. (1-21), 352 Hrs.
Prerequisites: None.

WE 13 INERT GAS WELDING
Theories and practices of manual inert gas shield technique (TIG) and short arc, high speed, semi-automatic, metallic arc process (MIG). 9 Ut. (1-25), 416 Hrs.
Prerequisites: None.

WE 14 WELDING (ADVANCED)
Practical theory application of weldments of specifications of AWS, API and ASME codes; all position welding of heavy plate and pipe; testing and weld specimens. 9 Ut. (1-25), 416 Hrs.
Prerequisites: None.

For course descriptions of related courses and electives refer to the appropriate departments in the Liberal Arts and/or Applied Arts and Sciences section of the catalog.

SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES

Day, Evening and Summer Sessions offering courses from the Schools of Liberal Arts and Sciences and Applied Arts and Sciences and special programs, seminars, and workshops.

FOR YOU *IF YOU PLAN TO TAKE COURSES—*

To meet specific job requirements.
To facilitate job advancement.
To promote self-development.
To make up academic deficiencies.
To earn credit toward an Associate Degree.
To earn credit for transfer to other institutions.

TO BE ADMITTED—

For part-time enrollment - (non-degree courses).
There are no prerequisites or requirements.

For part-time enrollment - (degree objective).

Acceptance in one of the degree programs at the College is restricted to applicants who can meet the regular admission requirements for specific programs in the School of Applied Arts and Sciences or the School of Liberal Arts and Sciences of the College. A student wishing to transfer Continuing Education courses to a Liberal Arts curriculum or Applied Arts program should consult with the appropriate dean prior to earning 15 credits for transfer purposes. Under such circumstances the Schools of Liberal Arts and Sciences or Applied Arts and Sciences cannot guarantee to accept more than 15 credits.
Exception: Industrial Technology - 15 Credit Hours.

Dr. WILLIAM HOMISAK, Dean of the School of Continuing Education and Community Services.

DEAN HOMISAK INTRODUCES YOU TO THE SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES

THE PURPOSE

The general objectives of the Continuing Education and Community Services' programs are to provide educational opportunities and community services for all adults and to encourage participation by adults in various programs of study and self-development which will assist them in carrying on more effectively their civic, social, career, and economic responsibilities. Its operation is based upon the belief that ample and varied opportunities for training, exploration of new interests, acquisition of new information, and development in new skills will help build a more enlightened and better community.

As a community institution, the evening sessions seek to serve the area through liberal arts' programs and special technical-vocational offerings. Responding to a growing demand, college transfer courses are included in the evening session curriculums. A student may be able to earn the Associate of Arts or the Associate of Science degree in the evening programs.

Through community services, special programs, including seminars and workshops, are available to government agencies, associations, industries, businesses and unions on an individual or contract basis. Organizations of this type may arrange for contract programs by contacting the Dean of Continuing Education and Community Services.

THE SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES

The desire of people of all ages to better understand themselves and the world they live in, and to receive general and specialized education, keeps the lights at The Williamsport Area Community College burning late into the night.

These are the lights of the School of Continuing Education and Community Services, a vital and integral part of the College's over-all educational program.

The School of Continuing Education and Community Services offers educational opportunities to many different people . . .

. . . to the person who must work during the day and desires to earn college credits in the evening.

. . . to the technician desiring to keep pace with today's rapid technological advances.

. . . to the person who wishes to improve his vocational skills.

. . . to housewives preparing for "second careers."

. . . to individuals seeking do-it-yourself skills.

. . . to men and women planning retirement.

. . . to the senior citizen.

. . . and, to the entire community — special training programs for government, business, industrial, professional and community organizations.

SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES

The School of Continuing Education and Community Services offers courses through the Schools of Liberal Arts and Sciences and Applied Arts and Sciences. Many of these courses, along with the regular School of Continuing Education and Community Services courses, are scheduled in the evenings and during the summers. Course offerings change periodically to keep in step with student needs and interests. Courses shown on pages 191 and 192 are typical of the curricular offerings of the School of Continuing Education and Community Services.

The Courses are so designed that college students may obtain an Associate Degree, a Certificate, or transfer credit; and interested adults may enrich their cultural and technical backgrounds. The School of Continuing Education and Community Services maintains the College's "open door" policy in that anyone desiring academic credit or self improvement is encouraged to enroll in the School.

SUMMER SCHOOL

The Summer School, operated under the School of Continuing Education and Community Services, offers courses from the Schools of Liberal Arts and Sciences, Applied Arts and Sciences, and various developmental programs for —

. . . students of The Williamsport Area Community College who wish to complete their work sooner, to supplement the work of the regular college year, to accelerate their work, or to remove deficiencies.

. . . high school graduates who wish to complete one or two courses to be transferred to the college of their choice for advanced standing in their fall freshman class.

. . . students of other colleges and universities to take one or two courses for credit acceptable to their resident college.

. . . high school students who wish to remove deficiencies and prepare for a college career.

. . . graduating high school students who do not plan to attend college, but would like to increase their academic knowledge in a particular subject or field.

. . . adults desiring to take courses for personal or professional advancement.

. . . college graduates seeking an opportunity for intellectual pursuit in Continuing Education.

. . . those who cannot pursue a full-time college education, but who wish to earn credits while maintaining a full-time job.

SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES / Courses

Virtually all Liberal Arts and Applied Arts courses are available to Continuing Education students as scheduled each semester. Continuing Education students are permitted to enroll in these courses where space is available and where the prerequisites for the particular course are met. A schedule of courses and times is available at the time of the Continuing Education registration. A typical listing of Continuing Education courses offered during a recent semester is shown on the next page.

LIBERAL ARTS AND SCIENCES

Course			*Credits*
BIO	101	General Biology I	4
BIO	105	Anatomy and Physiology of Man	4
BUS	201	Principles of Accounting I	3
BUS	250	Business Law I	3
CHE	101	General Chemistry I	4
CHE	103	Advanced General Chemistry I	4
CSC	101	Introduction to Computer Science	3
ECO	201	Principles of Economics	3
ECO	202	Economic Analysis	3
ECO	203	International Economics	3
EDU	201	Introduction to Education	3
EGR	200	Statics	3
EGR	201	Graphics	3
ENG	101	English Composition I	3
ENG	102	English Composition II	3
ENG	201	History of English Literature I	3
ENG	202	History of English Literature II	3
GEL	101	Elements of Geology I	4
GEO	101	Physical Geography	3
GER	101	Beginning German I	4
GER	201	Intermediate German I	3
GOV	201	American Government - National	3
GOV	202	State and Local Government	3
HIS	103	Western Civilization I	3
HIS	201	History of the United States I	3

Course			*Credits*
HIS	202	History of the United States II	3
HIS	290	Afro-American History	3
MAT	100	Fundamentals of Mathematics I	3
MAT	103	College Algebra	3
MAT	106	Calculus II and Analytic Geometry	4
MAT	111	Pre-Calculus	4
MAT	112	Calculus I	4
MAT	200	Fundamentals of Mathematics II	3
MAT	201	Statistical Analysis	3
MAT	203	Elementary Statistics	3
MAT	220	Matrix Algebra	3
PHL	101	Introduction to Philosophical Anal.	3
PHY	101	Introductory Physics	4
PHY	105	General Physics I	4
PSY	101	General Psychology	3
PSY	202	Educational Psychology	3
PSY	205	Abnormal Psychology	3
SOC	101	Introduction to Sociology	3
SOC	102	General Anthropology	3
SOC	201	Marriage and the Family	3
SOC	207	Criminology	3
SPA	101	Beginning Spanish I	4
SPA	201	Intermediate Spanish I	3
PE	101/103	Physical Education	1 & 2

APPLIED ARTS AND SCIENCES

Architecture	Food Service
Automotive	Forestry
Building Construction	Graphic Arts
Business	Industrial Management
Computer Science	Journalism & Broadcasting
Drafting	Library Science
Electrical	Machine Shop
Electronics	Sheet Metal

For specific course titles and descriptions of courses in the above Applied Arts fields, contact the office of the School of Continuing Education and Community Services at 1005 W. Third St., Tel. 326-3761, Ext. 209.

SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES

HOMEMAKING

SEWING

Course		*Credits*
HS01-C	Beginning Sewing	1
HS02-C	Intermediate Sewing	1
HS03-C	Advanced Sewing	1
HS04-C	Tailoring	1

MANAGEMENT

HM02-C	Home Interior Decorating	1
HA01-C	Small Appliance Repair	1
HA02-C	Hostess and the Home	1

BUSINESS AND DATA PROCESSING

ACCOUNTING

BA03-C	Principles of Accounting I	2
BA06-C	Personal Income Tax Seminar	1

SECRETARIAL

BE02-C	Business Correspondence	1
BS01-C	Beginning Shorthand	1
BS03-C	Shorthand II	1
BS09-C	Shorthand Transcription	1
BT01-C	Beginning Typing	1
BT03-C	Advanced Typing	1
BC01-C	Operator Maintenance of Business Machines	1

MANAGEMENT

PM01-C	Purchasing Management	3
BM05-C	Principles of Salesmanship	3
BM07-C	Small Business Management	1
BM08-C	Auto Sales and Records	1
EC12-C	Real Estate Principles	3
EC17-C	Real Estate Management	3
IM33-C	Personnel Management	3
IM43-C	Government and Business	3
GM01-C	Management Decision Making/Problem Solving	3

DATA PROCESSING

DP01-C	Introduction to Data Processing	2
DP02-C	Tech. Computer Program/Fortran	2
DP05-C	Business Computer Program/Cobol	2
DP08-C	Management Systems	2
DP04-C	R. P. G. Programming	2

GENERAL

CULTURAL

Course		*Credits*
GC01-C	Painting I	1
GC09-C	Painting II	1
GC05-C	Pottery and Ceramics	1
GJ01-C	Jewelry Making	1
GP01-C	Photography Principles	1
CG03-C	Chairmanship/Parliamentary Proc.	1
GS04-C	Retirement Planning	1
CG04-C	Effective Communications	1
CG05-C	Afro-American History	2
CD01-C	Self Defense for Women	1

WOODWORKING

GW01-C	Avocational	1
GW02-C	Beginning	1
GW03-C	Advanced	1
GW04-C	Furniture Refinishing	1

TECHNICAL AND TRADE

AUTOMOTIVE

AM02-C	Auto Tune-up and Maintenance	1
AM05-C	Auto Mechanics for Women	1
AM08-C	Small Engine Equipment & Repairs	2

CONSTRUCTION

CA02-C	Carpentry and Woodworking	1
CA03-C	Residential Cost Estimating	1
CA04-C	Commercial–Industrial Cost Est.	1
CA06-C	Masonry Principles	1
CA07-C	Soft Goods Floor Covering Install.	1
CA08-C	Dry Wall Construction	1

DRAFTING

DC06-C	Technical Drawing	1
IT13-C	Blueprint Reading	2
CT34-C	Statics	3
DC02-C	Mech. Behavior of Engr. Material	1

MACHINE SHOP

MS01-C	Basic	1
MS02-C	Measurement and Inspection	1
MS05-C	Advanced Numerical Control	3

QUALITY CONTROL

TQ32-C	Quality Control	3

ELECTRICITY

EW02-C	Fundamentals	1
EW05-C	Industrial and Construction	2
EW06-C	Advanced Theory	2
EW07-C	Motor Controls	2

ELECTRONICS

ET01-C	Electronics A	1
ET03-C	Electronics C	1
IT21-C	AC/DC Theory	3

FORESTRY/HORTICULTURE

FS02-C	Oper. & Maint. of Chain Saws	1
EN03-C	Residential Landscaping	1

HEATING

HC01-C	Heating and Air Conditioning	2

GRAPHIC ARTS

GA03-C	Photo Lithography	2
GA07-C	Composing and Copy Preparation	2
GA08-C	Photo-Mechanical Reproduction	2
GA09-C	Press Operation and Bindery	2

POLICE SCIENCE

PS10-C	Introduction to Law Enforcement	3

WELDING ($24.00 lab fee)

WD01-C	Basic Electric Arc	1
WD02-C	Basic Acetylene	1
WD04-C	Inert Gas	1

INDUSTRIAL TECHNOLOGY PROGRAM

School of Continuing Education and Community Services

The Industrial Technology Curriculum is designed to meet the needs of the working technicians, craftsmen, supervisors, or junior executives in business or industry who wish to earn an Associate Degree while being fully employed. Candidates for this degree program must be high school graduates or the equivalent. Program emphasis is placed on communication skills, mathematics, the sciences, and other knowledge required in today's modern industries.

Each student is permitted to enroll in courses with the possibility of completing the Associate Degree requirements within five years. The program is also open to anyone who does not wish to become a degree candidate. The procedure for enrolling in these courses is the same as that for any other course in the School of Continuing Education and Community Services. Upon completion of forty five credits, a student must make formal application as a candidate for an Associate Degree in Industrial Technology. A minimum of sixty credits is required to qualify for the Associate Degree, of which, up to 30 applicable credits may be transferred from other colleges.

GENERAL EDUCATION

		Mathematics (9 credits required)	
IM	10-C	Introduction to Mathematics	3
MAT	12-C	Algebra	3
MAT	19-C	Trigonometry	3
MAT	31-C	Calculus	3
MAT	40-C	Industrial Statistics	3
		**Science (6 credits required)*	
CHEM	10-C	Introduction to Chemistry	3
PHY	20-C	Physics I-Mechanical	3
PHY	22-C	Introduction to Metallurgy	4
PHY	23-C	Physics II-Electricity and Magnetism	3
PHY	32-C	Physics III-Heat and Light	3
		English and Humanities (6 credits required)	
ENG	11-C	Language and Composition	3
ENG	14-C	Speech	3
ENG	15-C	Technical Writing	3
		***Social Sciences (12 credits required)*	
ECO	11-C	Economics	3
ENG	31-C	Literature of the Western World	3
IM	43-C	Government and Business	3
PSY	101-C	General Psychology	3
PHIL	101-C	Introduction to Philosophy	3
SOC	101-C	Introduction to Sociology	3
SOC	102-C	Anthropology-General	3
HIST	101 or 102-C	United States History	3

INDUSTRIAL AND MANAGEMENT PROCESSES

		****27 credits required*	
BA	13-C	Applied Accounting-Managerial	3
BM	36-C	Marketing	3
BM	41-C	Business Law	3
CS	01-C	Introduction to Data Processing	3
EI	31-C	Basic Instrumentation	3
IM	20-C	Industrial Organization and Management	3
IM	30-C	Work Simplification, Time Study and Incentives	3
IM	31-C	Supervision-Human Relations	3
IM	32-C	Quality Control	3
IM	41-C	Industrial and Public Relations	3
IM	44-C	Industrial Safety	2
IM	47-C	Industrial Psychology	3
IT	13-C	Blueprint Reading and Sketching	2
IT	20-C	Basic Drafting and Tool Design	3
IT	21-C	AC - DC Theory	3
IT	22-C	Electronics	3
IT	23-C	Metal Fabrication Theory-Welding	3
IT	24-C	Principles of Metalworking-Machine	3
TM	14-C	Mathematical Calculations-Slide Rule	2

*Recommend CHEM10-C Introduction to Chemistry.

**Recommend ECO 11-C Economics.

***Recommend GA 13-C Applied Accounting-Managerial; CS 01-C Introduction to Data Processing; IM 31-C Supervision-Human Relations; IT 13-C Blueprint Reading and Sketching.

In order to best prepare himself for his vocation, a student may be permitted to select courses from the GENERAL EDUCATION areas to fulfill the 27 - credit Industrial and Management Processes requirement. Qualified Industrial Technology students may also substitute certain courses from the School of Liberal Arts and Sciences and the School of Applied Arts and Sciences with the approval of the respective Deans.

Course descriptions are available upon request at the office of the Dean of Continuing Education and Community Services.

Scheduling is based upon the student's academic qualifications and the required course sequences.

A 2.0 average must be maintained and a passing grade must be achieved in each required course used to meet Associate Degree standards.

Many courses are scheduled one night per week, usually between the hours of 7:00 and 10:00.

Cost and other charges: based upon standard rates of the College.

GRANT M. BERRY, SR., Dean of Student Services

DEAN BERRY EXPLAINS STUDENT SERVICES

From the time you apply for admission to the College, and throughout your college career, you will benefit from the professional assistance available to you through Student Services.

These services include admissions, testing, counseling, vocational diagnostic clinic, orientation, financial aid, student activities, health services, college transfer, and job placement — and help from a staff trained to aid you in solving problems that may confront you in college or in contemporary society.

The College Offices within Student Services are

Dean of Student Services
Admissions
Counseling
The Vocational Diagnostic Clinic
Financial Aid
Student Affairs
Health Services
Placement
Housing

The responsibilities of many of these offices in meeting your needs will be indicated in this section.

STUDENT LIFE IS EXCITING AND REWARDING!

STUDENT AFFAIRS

The majority of our students tell us they enjoy being students here. Those concerned with making them happy are largely preoccupied with encouraging their involvement in student activities. They try to guide them to a comprehension of Andre Guide's wise observation that "Man's happiness lies not in freedom, but in his acceptance of a duty."

ORIENTATION PROGRAM

During the first semester all freshmen are required to participate in an orientation program which includes a tour of the campus and a series of lectures and discussions on campus activities.

STUDENT GOVERNMENT

The Student Government seeks to improve the general welfare of the student body. Its major areas of concern are more effective campus communication, increased student participation in extra-curricular activities, and involvement in long-range plans for a new Student Union Building.

New on the student government scene are the Men's and Women's Student Councils. These groups have jurisdiction over many rules of dormitory life, sponsor a varied program designed to reflect the interests of men and women students, and act as a sounding board for their views in the dorms.

Student Government Officers (1972-73)

Left to Right: William Earley, social chairman, Richard Laedlein, treasurer; Theodore Saul, president; Margo Baumer, secretary; Millard Beatty, vice president.

CLUBS

Now active on campus are the following:

Alpha Phi Delta (Architecture)
Biology Club
Chi Gamma Iota (Veterans)
Cinema Club
Circle K Club (Kiwanis)
Computer Science Club
Drama Club
Forestry Technician Club
Gamma Epsilon Tau (Graphic Arts)
Glee Club Unit
International Relations Club
Married Student's Club
Mechanical Relations Club
Mechanical Engineering Club
Outing Club
Phi Beta Lambda (Business)
Student Government Association
Student PSEA-NEA
Theatre Unit
Tool Design Association
Women's Student Organization
Yearbook Staff Unit

New student clubs and organizations are constantly being formed:

1. Special departmental groups which include those who have a common interest or educational purpose;
2. Honorary groups where membership is earned as an award for achievement;
3. Service groups which exist to serve the College or community.

HOUSING FOR WOMEN

Attractive dormitory facilities with housemother supervision are provided at the Lycoming Hotel. All unmarried women students under 21 years of age are required to live in the Lycoming Hotel dormitory unless they reside with their parents or legal guardians.

HOUSING FOR MEN

The College provides limited dormitory facilities (the Hoover Dorms) accommodating approximately 125 men. However, as an aid to other male students seeking living quarters, the Office of Student Affairs publishes a list of available accommodations. The College does not sponsor, approve or disapprove the listed quarters. Students under the age of 21, and living away from home are not permitted to live in apartments. Any change of residence during a semester must be approved by the Director of Student Affairs and reported to the Registrar's Office. Men are accepted for housing on a first-come-first served basis. A full-time housing officer is employed by the college.

INSURANCE

A student sickness and accident policy is available to you at a nominal cost. Application forms may be obtained in the Dispensary.

HEALTH SERVICE

A dispensary, staffed by a registered nurse, is available to students during school hours. Services available include first aid for minor accidents and illnesses, assistance in obtaining care, and health counseling.

CAREER PLACEMENT

At the end of your stay at the College you will be entering upon one of the most significant events in your life. Full time employment in your chosen career will be the culmination of your many months of preparation here at The Williamsport Area Community College. Because of the time, effort, and financial investment you have put into your education, it is important to you that you acquire the best possible career employment opportunity.

In order to afford you all possible assistance in making a proper choice of your first career employment, the College's Placement Office is ready to serve you in your every placement need. Visit with the Placement Director well ahead of your graduation date in order that you can plan your career job-search campaign.

The Placement Office also lists part-time jobs that are available in the community. If you need this type of employment, visit the Placement Director early in the semester for leads on those jobs that are open.

THE COLLEGE LIBRARY

The College maintains a modern library containing more than 40,000 volumes including a wide range of reference works. Ample audio-visual devices enhance the student's use of the library. Students are expected to familiarize themselves with the facilities by reading the library information in the Student Handbook and Library Handbook.

The Student Services Staff

These officials will play important roles in your college career from the time of admission to beyond graduation.

Left to Right:
Mr. Ross J. Nahrgang,
Director of Placement
Mr. Frank J. Bowes,
Director of Student Affairs
Mr. Grant M. Berry, Sr.,
Dean of Student Services
Dr. George T. DeSau,
Director of Counseling
Mr. Robert M. Hontz,
Director of Admissions

SOCIAL EVENTS

The Student Government Association sponsors a series of dances, Fall and Spring Weekends and many other social events during the school year.

ATHLETICS

The College subscribes to the belief that well-balanced intramural and intercollegiate sports' programs play an important role in the overall purpose of an educational institution and sponsors these activities as an integral part of its educational program.

INTRAMURALS

Intramurals provide an opportunity for you to participate in active competition to improve your physical strength and skill, to pursue beneficial leisure time activities, and to develop friendships. The Physical Education Department conducts a wide variety of intramural athletic leagues for men and women. These activities include touch football, soccer, basketball, volleyball, bowling, table tennis, wrestling, tennis, golf, track and field, softball, handball, horseshoes, and others.

INTERCOLLEGIATE SPORTS

The Intercollegiate Sports Program at the College is under the direction of the Physical Education Department. At present, the College has a basketball team which is a member of the National Junior College Athletic Association and a wrestling team, a member of the same association. Cross-country, golf, and tennis were the newest teams to reach intercollegiate status.

COLLEGE COLORS AND NICKNAME

The colors of the College are gold and burgundy and the athletic teams are nicknamed the Wildcats. Both the College colors and the nickname were selected by popular vote of the students.

CHEERLEADING

Cheerleaders represent the student body at all athletic contests. This activity is under the direction of a faculty member. Announcements for tryouts are held each Fall and any student may try out for the squad. Members are selected on the basis of skill, personality, poise, and enthusiasm.

PUBLICATIONS

The official College newspaper is the Spotlight, published at regular intervals throughout the College year. The Spotlight uses student and faculty talent in editing, writing, photography, and technical production. Staff positions are open to freshmen and sophomores.

Montage is the College yearbook which provides a pictorial account of the school year with a focus on the graduating class. Practical experience in management, writing, and editorial work is available to freshmen and sophomores through staff membership.

The Student Handbook is published by the Office of College Information in cooperation with the Student Government. It is distributed to all students and faculty at the beginning of each College year. It is the College guide and directory and will keep you up to date on Academic Regulations and Student Services.

The Daily Crier is a news-letter sponsored by the Office of Student Affairs for the purpose of keeping the student body and the faculty informed on current issues, announcements, programs, and activities that effect all Schools of the College.

National Shakespeare Company

Madame Chennault

Violinist Buswell with Detroit Symphony Orchestra

The cultural environment of the College and of the citizenry of the College's service area is enhanced by a balanced program of concerts, lectures, films, and performances by nationally known groups and performers. Outstanding among recent presentations have been the Pennsylvania Ballet, Detroit Symphony Orchestra, National Shakespeare Company, Madame Chennault, Kreskin, Marcel Marceau, Astronaut Scott Carpenter, Jesse Owens, and Addiss and Crofut. Among the cultural events sponsored by the Student Government Association is a series of classical movies of yesteryear. Students are admitted free to the college-sponsored events under their activity fee.

Astronaut Carpenter

Pennsylvania Ballet

Addis and Crofut, folk singers

The College welcomes the active partnership of your parents. As a feature of its orientation program, which seeks to assist you in adjusting to college life, the College holds a reception for parents in the early part of each school year.

Members of the administration and faculty present the college viewpoint and inform your parents of the problems which face you in college today. Methods of coping with these difficulties by helping you develop proper study habits and self-discipline are discussed.

The College seeks to achieve a measure of collaboration in working for your best interests by acquainting your parents with various aspects of academic life.

PARENTS' DAY

ACADEMIC INFORMATION

CLASSIFICATION OF STUDENTS

REGULAR STUDENT

FULL-TIME: To be enrolled as a full-time degree or certificate candidate, a student must carry a minimum of twelve credits or equivalent certificate hours.

PART-TIME: A degree or certificate candidate who carries less than twelve credits or equivalent certificate hours, is enrolled as a part-time student.

CONTINUING EDUCATION STUDENT

Except for degree candidates in the Industrial Technology program, Continuing Education students are not regularly admitted degree or certificate candidates. Continuing Education students carry limited numbers of credits or credit equivalent and follow regulations under the direction of the office of the Dean of Continuing Education. Certain course work taken in the School of Continuing Education may be applied toward a degree or certificate program.

SPECIAL STUDENT

In the school of Applied Arts and Sciences, a special student is one who is not matriculated for a degree or a certificate. Such a student is permitted to select courses without regard to degree or certificate requirements. In the school of Liberal Arts and Sciences, a special student is usually one who has been readmitted or allowed to remain in the school on a full time basis in order to remedy past academic deficiencies.

CLASSIFICATION OF STUDENTS – CLASS RANK

FRESHMAN - Regular students who have a total of fewer than 30 credit hours or equivalency are members of the freshman class.

SOPHOMORE - Regular students who have a total of 30 or more semester hours or credit equivalency are members of the sophomore class.

REGISTRATION

You must register in person on the dates specified in the College Calendar. If your registration is not completed, including payment of all required fees during the days specified as registration days, you will be charged a late registration fee.

CREDIT AND SEMESTER-HOUR LOAD

The academic year is divided into two semesters of approximately 16 weeks each. The normal load per semester is 15 to 18 semester hours. Students are expected to allow an average of at least two hours preparation for each semester hour of course work.

A student may not enroll for more than 18 semester-hours without special permission from the Dean of his respective School.

CHANGE OF COURSE

A student may drop a course any time before the last two weeks of a semester by having his advisor complete an official "Request for change of Course" form. A course dropped before the end of six weeks is recorded with a W grade. No credit is given for a W grade. A course dropped after the end of six weeks is a recorded grade of WF. A grade of WF affects a student's grade-point average in the same manner as an F. A course dropped after six weeks may be recorded as a W only upon recommendation of the instructor and the Dean.

A student may add courses during the first week of classes by having his advisor complete a "Request for Change of Course" form.

The approval of the appropriate dean must be obtained before each change can be made.

REPEATING A COURSE

A student may repeat a course in which he has earned a grade of D or F; however, he must improve the grade on the repeated course to affect his cumulative grade-point average, in which case both grades will appear on his permanent record card and be used in figuring his cumulative grade-point average. If a student repeats a course and earns a second D or F the second grade and credits will not be used in calculating his cumulative grade-point average. He will not be permitted to take the course a third time.

TRANSFER WITHIN COLLEGE

When a student contemplates a transfer from one School within the College to another or from one program or curriculum within the College to another, he should confer with his faculty advisor. If the transfer is approved, an evaluation of credits previously earned must be made by the Dean. Credits (or hours) only will be accepted in the new program or curriculum. The cumulative grade-point average will reflect only grades and credits earned in the new program or curriculum. A student must be enrolled his last semester in College in the program or curriculum from which he expects to be graduated. For example, if he is enrolled in a degree program his last semester, he cannot receive a diploma from a certificate program because of failure or lack of required subjects in a degree program.

CREDIT BY EXAMINATION

Students who have completed at least one semester at The Williamsport Area Community College may earn credit by examination and receive a grade. Application for such examination is made through the respective Dean's office. Approval must then be given by the Chairman of the Department concerned and the Dean of the School. If approval is received, a fee of $25.00 must be paid at the business office prior to each examination. The examination is taken at a time set by the Chairman of the Department. Presentation of the $25.00 receipt is the Chairman's permission to administer the examination. Such examination may not be given to overcome a D or an F grade.

A maximum of 15 credits may be earned by examination in addition to the 15-credit maximum under Advanced Placement and Credit.

A passing grade from credit by examination will be recorded on the student's permanent record and will be used in determining the cumulative grade-point average. A grade of F will not be recorded on the permanent record. Faculty members may not assist any student preparing for this type of examination.

SUBSTITUTION FOR REQUIRED COURSES

Under special circumstances, determined by the Dean to merit such action, a student may apply for a substitution of courses usually required in a given program. Requests for substitution must be approved by the Dean. The Dean must approve substituted courses.

GRADING SYSTEM

The College uses the following system of grading (4.00 basis) to indicate on its records the quality of a student's work:

Grade	Significance	Grade Points
A	Superior	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Failing Work	0
W	Withdrawn	0
WF	Withdrawn Failing	0
I	Incomplete	0
AU	Audit	0

A grade reported as INCOMPLETE ("I") at the end of a semester will be permanently recorded as an F if the incomplete is not removed within the following semester.

A student's grade-point average is computed by dividing the number of his grade points by the total number of credits or certificate hours for which he has earned a grade of A, B, C, D, F, or WF.

With the consent of the instructor and dean concerned, a student may enroll as an auditor in a non-laboratory course. Auditors are not required to take examinations and do not receive credit for the course.

GRADE REPORTS

The College will notify by mail the parents of students who receive a D or an F in any subject at mid-semester. Students who receive such grades must immediately consult with their instructors and faculty advisors in an effort to improve the quality of their work. Final semester grades will be mailed after the end of the semester or the summer session.

THE DEAN'S HONOR LIST

The honor list for each School is announced by the Dean of the respective School at the completion of each semester. This list will include only those full-time students who have a grade-point average of 3.30 or better.

WITHDRAWAL FROM COLLEGE

If a student finds it necessary to withdraw from the College, in order to receive an honorable dismissal, he must:

1. Officially withdraw by reporting to his advisor to complete the necessary forms.
2. Satisfactorily account for all College property issued to him.
3. Settle all outstanding College obligations.

An honorable dismissal entitles the student to re-enroll, to be recommended for transfer to another college or for employment and to request transcripts.

If a student does not officially withdraw from the College, he will be given the grade of WF in all subjects.

A student may be suspended or dismissed for improper conduct, failure to comply with College regulations, academic dishonesty, habitual absences, lack of effort and interest, possession of or being under the influence of alcoholic beverages or illegal drugs or other circumstances as determined by the Board of Trustees. If a student leaves the College under these circumstances, he will not receive an honorable dismissal.

ACADEMIC REGULATIONS

STUDENT CONDUCT

On admission to the College you accept unqualified commitment to conduct yourself at all times, both on and off the campus, in a responsible manner conforming with generally accepted standards of adult behavior. It is expected that as a student of the College you will show common courtesy and respect for College officials, faculty and employees. You are expected to understand and accept College regulations and to respect the directives of those authorized to enforce regulations. If you conduct yourself in a manner contrary to the best interest of the College, you will be subject to penalties as the circumstances justify, including suspension or dismissal.

In all cases where academic dishonesty is established, the student will be dropped from the course with a grade of F. For a second offense, he may be dismissed from the College. In a case involving a question of academic dishonesty, the professor in whose class the incident is alleged to have occurred will consult with the appropriate Dean regarding disciplinary action.

ATTENDANCE REGULATIONS

Regular and prompt attendance at all classes and at scheduled conferences with instructors is expected of all students. All work missed by reason of absence, regardless of the cause, must be made up to the satisfaction of the instructor. A student who knows that he will be absent is expected to get assignments from his instructors in advance so that the necessary work will be completed before he leaves or immediately upon his return. This applies to absences for college activity trips as well as absences for other reasons. In all cases of anticipated absence, the student should confer with his instructor in advance whenever possible. Normally, a calendar week's absence is considered excessive.

Students are expected to be in the classroom or laboratory at the scheduled hour. Habitual tardiness may be considered cause for dismissal from the class.

SCHOLASTIC REQUIREMENTS

Any degree or certificate candidate whose cumulative grade-point average is below 2.00 will be placed on academic probation. A student on probation will be required to report to the Dean of his respective School for special counseling before being allowed to register for classes the following semester. After interviews with the Dean, adjustment will be made in his academic load and he will be

expected to achieve a grade-point average of 2.00 or above for the succeeding semester. A student may be dropped from the College unless he accumulates a grade-point average as follows:

Beginning of	Cumulative Grade-Point Average
Second Semester	1.50
Third Semester	1.80
Fourth Semester	1.90

Students are encouraged to seek consultation on academic matters with the Deans of the respective Schools.

It is the prerogative of the Deans of the Schools to drop a student from the College at any time or to place a student on warning for one semester or longer.

FINAL EXAMINATIONS

Final examinations are scheduled at designated times at the end of each semester. The schedule normally provides for an examination period for each course. A student who is absent from a final examination without good reason is subject to a failing grade.

GRADUATION REQUIREMENTS

1. The successful completion of a prescribed two-year program of study at The Williamsport Area Community College leads to an Associate of Arts Degree or an Associate of Science Degree from the School of Liberal Arts and Sciences or an Associate in Applied Arts Degree or an Associate in Applied Science Degree from the School of Applied Arts and Sciences.

To be eligible for a degree from The Williamsport Area Community College, the student is expected to satisfy the following:

a. Complete a prescribed program or curriculum of study as set forth in this catalog. The fourth semester must have been completed at the College.
b. Earn at least a C average (2.00 grade-point average).
c. Satisfy health and physical education requirements.
d. Fulfill all financial obligations to the College.

2. Certificates will be awarded for the satisfactory completion of certain courses or the satisfactory completion of a series of courses designed for a specific purpose.

3. If, after completing four semesters, you lack some credits required for a degree, you may, with approval of the Dean, be permitted to take up to six semester credit hours from another college to fulfill requirements for the Associate Degree from The Williamsport Area Community College. Only grades of C or better are acceptable for such credit transfer.

COMMENCEMENT AWARDS

PRESIDENT'S AWARD for leadership and service to the College community.

TRUSTEES' AWARD to a male student for achievement under exceptional conditions.

TRUSTEES' AWARD to a female student for achievement under exceptional conditions.

DEAN'S AWARD for scholastic achievement in the School of Liberal Arts and Sciences.

DEAN'S AWARD for scholastic achievement in academic subjects in the School of Applied Arts and Sciences.

ALCAN CABLE AWARD for scholastic achievement in Engineering Science.

AVCO AWARD for scholastic achievement in Humanities and Social Science.

DARLING VALVE AWARD for scholastic achievement in Applied Arts and Sciences - Certificate Program.

M. W. KELLOGG AWARD for scholastic achievement in Applied Arts and Sciences - Associate Degree Program.

LEWIS H. BARDO MEMORIAL AWARD to a student who exemplifies the ideals of Lewis H. Bardo (devotion to duty, helpfulness to others, friendliness, high ideals.)

DALE RUSS BERG AWARD for proficiency in the operation and use of heavy equipment.

HOWARD AWARD for scholastic achievement in Forestry.

HOWARD AWARD for scholastic achievement in Horticulture.

ELIZABETH R. DOWNS AWARD for secretarial proficiency.

PENN-YORK LUMBERMEN'S AWARD for outstanding citizenship and interest in management and wise use of forest resources.

WILLIAM J. STITZEL MEMORIAL AWARD for the graduate from the Heavy Construction Equipment Department who best exemplifies William J. Stitzel's dedication and service to the College and the student body.

FACULTY WIVES' AWARD to a female student who has demonstrated those qualities of friendliness, leadership and courage as exemplified in the life of Mrs. N. Nadine Homisak.

WALL STREET JOURNAL STUDENT ACHIEVEMENT AWARD to a graduating senior demonstrating superior achievement in Economics.

LYCOMING COUNTY AMERICAN CANCER SOCIETY AWARD to a graduating nurse who excels in bedside nursing of a cancer patient and shows compassion for the family of the patient.

HELEN A. SMITH AWARD to a student who has shown extraordinary achievement in theory, practice, and personal growth.

ROBERT G. THOMAS AWARD for the graduating student who has attained the highest cumulative average in Welding.

Chi Gamma Iota (Veterans) Fraternity former president and Dr. Carl, president of the College, display plaque which was dedicated to the memory of the nation's war dead.

Many returning Vietnam veterans are exploring educational opportunities and finding them attractive at The Williamsport Area Community College. A highly active veterans' fraternity, Chi Gamma Iota is located on the campus and serves as the area headquarters for the Program to Advance Veterans Education (PAVE).

The two-year career programs at W.A.C.C. are well suited to the veteran who wants to "make up for lost time," by training for a career while earning an Associate Degree or Certificate.

For more information on assistance to veterans, turn to pages 24 and 25.

CALENDAR 1972–73

FALL SEMESTER 1972

September 5	Tuesday	Faculty Organization and Convocation
September 6-7	Wednesday-Thursday	Registration
September 9	Saturday	Faculty Picnic — Reception New Faculty
September 11	Monday	Continuing Education Registration — 5:30 - 9:30 p.m.
September 11	Monday	Orientation
September 12	Tuesday	Classes Begin
September 18	Monday	Diagnostic Program Begins
September 19	Tuesday	Last Day for Adding Courses
October 2	Monday	Last Day for Partial Refund
October 9	Monday	Diagnostic Program Begins
October 13-14-15	Friday-Saturday-Sunday	Fall Weekend
October 20	Friday	Open House
October 21	Saturday	Parents' Day
October 23	Monday	Last Day to Drop Classes — "W" grade
October 30	Monday	Diagnostic Program Begins
November 8	Wednesday	Mid-term Grades Due
November 22-27	Wednesday-Monday	Thanksgiving Recess
Dec. 23 - Jan. 1	Saturday-Monday	Christmas Recess
January 15	Monday	Final Examinations Begin for Academic Courses — 1:00 p.m.
January 16-19	Tuesday-Friday	Final Examinations Begin for All Classes
January 20	Saturday	Final Grades Due — 4:00 p.m.

SPRING SEMESTER 1973

January 29-30	Monday-Tuesday	Registration
January 31	Wednesday	Continuing Education Registration — 5:30 - 9:30 p.m.
January 31	Wednesday	Orientation
February 1	Thursday	Classes Begin
February 5	Monday	Diagnostic Program Begins
February 8	Thursday	Last Day to Add Courses
February 21	Wednesday	Last Day for Partial Refund
February 26	Monday	Diagnostic Program Begins
March 14	Wednesday	Last Day to Drop Classes — "W" Grade
March 19	Monday	Diagnostic Program Begins
March 30	Friday	Mid-term Grades Due
April 19-23	Thursday-Monday	Easter Recess
April 30	Monday	Diagnostic Program Begins
May 11-12-13	Friday-Saturday-Sunday	Spring Weekend
May 28	Monday	Final Examinations Begin for Academic Courses
May 29-June 1	Tuesday-Friday	Final Examinations Begin for All Classes
June 2	Saturday	Final Grades Due — 4:00 p.m.
June 9	Saturday	Commencement — 2:00 p.m.

SUMMER SCHOOL 1973

June 18	Monday	Registration
June 19	Tuesday	Classes Begin
June 21	Thursday	Last Day to Add Courses
July 4	Wednesday	Fourth of July — Holiday
July 9	Monday	Last Day to Drop Courses with "W" Grade
August 15-16	Wednesday-Thursday	Final Examinations
August 17	Friday	Final Grades Due — 9:00 a.m.

GRADUATION ISN'T THE END – IT'S COMMENCEMENT

Our Graduates Return –

The WACC-WTI Alumni Association has been organized on the campus and we hope . . . in two or three years you'll be a member.

To tell us about their exciting new jobs as executive secretaries!

To keep in touch with our Placement Officer for job opportunities!

To visit a favorite instructor
and introduce us to a future member of the Class of '92!

COLLEGE ADMINISTRATIVE OFFICES AND PROFESSIONAL PERSONNEL

Office of the President

Kenneth E. Carl, Ed.D.
President

Ruth M. Howard
Secretary to the President

Ralph L. Boyers, D.Ed.
Assistant to the President for Research

Lewis J. Capaldi, M.S.
Assistant to the President for Planning and Development

Mendelssohn I. Hoxie, M.S.
Assistant to the President for College Information

George C. Mosteller
Expediter-Surplus Property

Office of the Vice President

C. Herschel Jones, Ph.D.
Vice President

Leota M. Keller
Secretary to the Vice President

Miriam L. Peffer
Scheduling Officer

Kathryn M. Plumridge, M.B.A.
Registrar

Academic Deans, Department Chairmen, and Directors of Programs

School of Applied Arts and Sciences

James P. Bressler, M.S.
Dean of the School of Applied Arts and Sciences

Samuel R. Wiersteiner, Ph.D.
Assistant Dean of the School of Applied Arts and Sciences

Department Chairmen-School of Applied Arts and Sciences

Charles E. Wilkinson
Automotive

C. Frank Pannebaker
Aviation

C. Burt Francis
Building Construction

Donald B. Bergerstock, M.S.
Business Administration

George P. Wolfe, M.S.
Computer Science

Fred R. Jones
Drafting

Joseph G. Sick, M.S.
Earth Science

Donald O. Young, Sr.
Electrical

Clinton B. Dawes
Electronics

Vivian Moon, B.S.
Food Service Management

John (Jay) Hilsher, Jr.
Graphic Arts

Thelma S. Morris, M.S.
Health Occupations

Edward J. West, M.S.
Industrial Management

Journalism and Broadcasting

Library Science

Earl L. Parrish
Machine Shop

George W. Gesler
Office Machine Repair

Bernard C. Williams
Welding

Program Direction-School of Applied Arts and Sciences

Area Vocational Technical School Program
Alfred L. Hauser
Coordinator

William A. Holmes
Job Coordinator-Cooperative Programs

Dental Health Program
Aristede S. Red, D.D.S.
Director

Radiological Technology Program
Harmon J. Machanic, M.D.
Director

Robert M. Alban
Coordinator

School of Liberal Arts and Sciences

Otto L. Sonder, Jr., D.Ed.
Dean of the School of Liberal Arts and Sciences

Department Chairmen-School of Liberal Arts and Sciences

James E. Logue, M.S.
English, Speech Arts, Foreign Languages, Philosophy

G. Robert Kissell, M.S.
History and Government

Dan C. Farris, Ph.D.
Mathematics

Ronald E. Thompson, M.S.
Natural Sciences (Biology, Chemistry, Geography, Geology, Physics)

Thomas E. Vargo, M.S.
Physical Education

Paul Feng, Ph.D.
Social Sciences (Economics, Education, Psychology, Sociology) and Business Administration

Program Direction-School of Liberal Arts and Sciences

Developmental Program
C. William Morris, M.Ed.
Director

School of Continuing Education and Community Services

William Homisak, Ed.D.
Dean of the School of Continuing Education and Community Services

Edward F. Nichols, Ph.B.
Assistant to the Dean of the School of Continuing Education and Community Services

Office of the Dean of Business and Finance

Andrew D. Mehall, B.S.
Dean of Business and Finance

Leland J. Calistri, B.S.
Comptroller

James R. Dooley
Cheif Accountant

Robert W. Edler
Bookstore Manager

Alberta P. Neff
Bursar

Robert L. Schultz
Director of Purchasing

Office of the Dean of Student Services

Grant M. Berry, Sr., M.Ed.
Dean of Student Services

Robert M. Hontz, M.S.
Director of Admissions

Lucille G. Cohen, B.A.
Admissions Officer

Stephen Serman, M.Ed.
Admissions Officer

Frank J. Bowes, M.Ed.
Director of Student Affairs

George T. DeSau, Ed.D.
Director of Counseling

William E. Berkheiser, B.A.
Counselor

Grant M. Berry, Jr., M.Ed.
Counselor

James A. Bryan, M.Ed.
Counselor-A.V.T.S. Programs

Thomas M. McNally, M.Ed.
Counselor

Weldon W. Michael, M.Ed.
Counselor-A.V.T.S. Programs

Thomas C. Shoff, M.Ed.
Counselor

Ned C. Strauser, M.Ed.
Counselor

Nancy C. Elias, R.N.
Industrial Nurse

Evelyn L. Seaman, R.N.
Industrial Nurse

George W. Kehrer
Director of Student Aid

Ross J. Nahrgang, M.B.A.
Director of Placement

Daniel R. Wolf, M.A.
Director of Housing

Audio-Visual Services

Richard C. Long
Director of Audio-Visual Services

A. Neale Winner
Audio-Visual Specialist

Library Services

David P. Siemsen, M.S.L.S.
Director of Library Services

Laura M. Coleman, M.L.S.
Associate Librarian

Andrew E. Spuler, M.L.S.
Associate Librarian

Physical Plant

Richard O. Lewis
Supervisor of Buildings and Grounds

Robert E. Linn
Custodial Supervisor

John C. Robinson
Maintenance Supervisor

Lawrence P. Smeak
Director of Security

DIRECTORIES

FACULTY

School of Liberal Arts and Sciences

Donald R. Aurand
Associate Professor of Mathematics, B.S., Lock Haven State College; M.S., Yeshiva University

Robert G. Bowers
Associate Professor of Mathematics, B.S., Juniata College; M.S., University of Delaware; Ph.D., The Pennsylvania State University

Ralph L. Boyers
Associate Professor of Geology and Geography, G.E., Colorado School of Mines; M.S., D.Ed., The Pennsylvania State University

Charles A. Brooke
Instructor in Mathematics, A.B., Lycoming College

William O. Burdett
Associate Professor of Physical Education, B.S., Lock Haven State College; M.S., Bucknell University

Gene A. Carr
Instructor in Geology and Geography, B.S., Eastern Illinois University; A.M., Indiana University, Indiana

A. V. Chinnaswamy
Instructor in Mathematics, B.S., P.S.G. Arts College; M.A., Madras Christian College; M.A., Ph.D., The Pennsylvania State University

David B. Clark
Assistant Professor of Chemistry, B.A., Lycoming College; M.S. Bucknell University

Ned S. Coates
Assistant Professor of English, B.A., Susquehanna University; M.A., University of Arkansas

G. Louise Courtney
Assistant Professor of Physical Education, B.S., M.Ed., The Pennsylvania State University

Roger E. Davis
Assistant Professor of Mathematics, B.S., Clarion State College; M.S., Bucknell Univeristy

Daniel J. Doyle
Associate Professor of History, B.A., Maryknoll Seminary; M.A., Ph.D., St. John's University

Peter B. Dumanis
Instructor in English, B.A., Clark University; M.A., Adelphi University; Ph.D., Syracuse University

Dan C. Farris
Associate Professor of Mathematics and Chairman, Department of Mathematics; B.S., M.S., Western Illinois University; Ph.D., The Pennsylvania State University

Robert E. Feir
Instructor in Government, A.B., Bucknell University; A.M., State University of New York at Albany

Paul Feng
Professor of Sociology and Psychology and Chairman, Department of Social Sciences and Business Administration; B.A., United Universities of Hong Kong; M.S., Sam Houston State College; M.A., Ph.D., New York University

Bert Green
Assistant Professor of Economics, A.B., Susquehanna University; M.A., Bucknell University

J. Roger Holdstock
Instructor in English, B.A., Los Angeles State; M.A., Ph.D., University of California

Kenneth A. Jackson
Assistant Professor of Metallurgy and Physics, B.S., M.S., University of Alberta, S.M.I.E.E.E.

C. Herschel Jones
Vice President of the College and Professor of Government, B.A., Ohio Wesleyan University, Ph.D., The University of Wisconsin

John H. Jones
Instructor in Mathematics, B.S.E.E., The Pennsylvania State University

Edward J. Kirchman
Instructor in English, B.A., Susquehanna University

G. Robert Kissell
Associate Professor of History and Government and Chairman, Department of History and Government, B.S., Lock Haven State College; M.S.Ed., Bucknell University

Harvey H. Kuhns, Jr.
Associate Professor of Economics, B.S., Lycoming College; M.S., Bucknell University

John H. Lego
Instructor in Mathematics, B.S., The Pennsylvania State University

Patricia E. Lewis
Assistant Professor of Mathematics, B.S., Lycoming College; M.S., Bucknell University

James E. Logue
Associate Professor of English and Chairman, Department of English, Speech Arts, Foreign Languages, and Philosophy, B.A., M.A., Bucknell University

Hugh M. MacMullan
Professor of English, A.B., Williams College: B. Litt., Oxford University

Florence M. Markley
Instructor in English, B.S., Millersville State College

Lyman I. Milroy
Assistant Professor Mathematics, B.A., Susquehanna University; M.S., Bucknell University

Carl L. Mincemoyer
Assistant Professor of Economics, B.S., Lycoming College; M.Ed., The Pennsylvania State University

Reynolds V. Mitchell
Assistant Professor of English, B.S., Lock Haven State College; M.Ed., Bloomsburg State College

C. William Morris
Associate Professor of Mathematics, Director of Developmental Program, B.S. Lock Haven State College; M.Ed., The Pennsylvania State University

Gladys L. Morris
Instructor in Language Skills, B.S., Lock Haven State College

Robert K. Most
Instructor in Psychology, B.A., Duke University; M.A., Temple University

Veronica M. Muzic
Instructor in English, B.A., Misericordia College

Richard E. Nellis, Jr.
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1005 West Third Street, Williamsport, Pa. 17701
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